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April 1957

P. H. KARMEL: The Australian Economy, April 1957 1

Articles

J. E. MEADE & R. A. RUSSELL: Wage Rates, the Cost of Living and the Balance of Payments 23

W. M. CORDEN: The Calculation of the Cost of Protection 29

H. P. SCHAPPER & R. G. MAULDON: A Production Function from Farms in the Whole-Milk Region of Western Australia 52

K. F. WALKER: Arbitration in a New Key 60

W. T. DOWSETT: Spatial Competition and Sheltered Industries 72

K. BUCKLEY: E. G. Wakefield and the Alienation of Crown Land in New South Wales to 1847 80

C. WESTSTRATE: An Estimate of the Magnitude of Income Redistribution in New Zealand 97

Notes

JOAN ROBINSON: Economic Growth and Capital Accumulation —A Comment 103

H. W. ARNDT & B. CAMERON: An Australian Consumption Function .. 108

News and Notes 116

Reviews (see inside cover) 118

Index to Volume XXXII

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HB 1
E25

REVIEWS

ABEL-SMITH, BRIAN, and TITMUSS, RICHARD, M. *The Cost of the National Health Service in England and Wales*, R. H. WALLACE 131

BEAL, GEORGE MAX, and BAKKEN, HENRY H. *Fluid Milk Marketing* .. .. A. G. WHITLAM 132

BELSHAW, HORACE. *Population Growth and Levels of Consumption* C. E. V. LESER 121

BENDIX, REINHARD. *Work and Authority in Industry* K. F. WALKER 124

BLODGETT, RALPH H., and KEMMERER, DONALD L. *Comparative Economic Development* .. .. MALCOLM HILL 135

BURKHEAD, JESSE. *Government Budgeting* .. .. .. W. R. LANE 131

CASSELMAN, PAUL H. *The Economics of Employment and Unemployment* .. .. A. HAGGER 133

CENTRAL STATISTICAL OFFICE. *National Income Statistics* F. R. E. MAULDON 132

CHANDRASEKHAR, S. *Population and Planned Parenthood in India* 135

DUNSDORFS, EDGARS. *The Australian Wheat-Growing Industry, 1788-1948* .. .. KEITH O. CAMPBELL 118

EINZIG, PAUL. *The Economic Consequences of Automation* JAMES P. BELSHAW 133

FAY, C. R. *Adam Smith and the Scotland of His Day*, J. A. LA NAUZE 134

GREENHUT, MELVIN L. *Plant Location in Theory and Practise* D. M. HOCKING 132

HAGUE, D. C., and STONIER, A. W. *The Essentials of Economics* 134

HICKS, J. R. *A Revision of Demand Theory* .. .. A. R. BERGSTROM 134

HOFFMANN, W. *British Industry 1700-1950* .. .. .. N. G. BUTLIN 120

KALDOR, NICHOLAS. *An Expenditure Tax* .. .. D. STEELE CRAIK 126

KINDLEBERGER, CHARLES P. *The Terms of Trade*, A. J. REITSMA 131

KOONTZ, HAROLD, and GABLE, RICHARD W. *Public Control of Economic Enterprise* .. .. R. R. HIRST 132

KUZNETS, SIMON (ed.). *Income and Wealth, Series V* JAMES W. ROWE 132

MELMAN, SEYMOUR. *Dynamic Factors in Industrial Productivity* J. McB. GRANT 133

NATIONAL CONFERENCE ON AUTOMATION. *The Challenge of Automation* .. .. JAMES P. BELSHAW 133

ROBERTS, B. C. *Trade Union Government and Administration in Great Britain* .. .. R. M. MARTIN 133

ROBERTSON, SIR DENNIS. *Economic Commentaries* .. J. G. PRIDE 134

SENNHOLZ, HANS F. *How Can Europe Survive?* .. NEVILLE CREW 134

SHULTZ, G. P., and BALDWIN, G. B. *Automation* JAMES P. BELSHAW 133

WEISSKOPF, W. A. *The Psychology of Economics* .. G. S. L. TUCKER 134

WOLF, CHARLES, JNR., and SUFRIN, SIDNEY C. *Capital Formation and Foreign Investment in Underdeveloped Countries* DON MCKENNA 123

YORSTON, R. KEITH. *Limited Liability Companies in Australia* D. LAMBERTON 124

ZEUTHEN, F. *Economic Theory and Method* .. .. .. G. G. FIRTH 129

HB
1
.E25

The Economic Record

Vol. XXXIII April 1957 No. 64

THE AUSTRALIAN ECONOMY, APRIL, 1957

In the twelve months since the presentation of the Little Budget in March 1956, there have been appreciable changes on both the domestic and external fronts of the Australian economy. The trends leading to the Little Budget and its rationale were fully discussed by Professor Downing in the first of these survey articles, while the early stages of the developments which followed upon the Little Budget and its associated economic measures were analysed by Professor Rowan in the last *Economic Record*.[1] It is the task of this article to consider the implications for the immediate future of the changes in the economy which have become evident since the third quarter of 1956.

These changes have been in the same direction as those noted by Professor Rowan. Internal economic activity, at least as measured in terms of employment, is running at a somewhat slower tempo than a year ago, while the balance of payments has undergone a quite dramatic change. The favourable swing in the balance of payments must operate as an expansionary influence. The key question must then be to what extent will this influence reverse the disinflationary tendencies which appear to exist at the present time.

Such a question cannot be answered with any great precision. Precision would be difficult enough even if one had a full picture of the state of the economy at the present moment. In fact, however, the statistical picture which can be built up is at best two to three months out of date, and in a state of near-balance the last two or three months may be critical. Moreover, a period of slight retreat from inflationary pressures must be one of uncertainty and it is impossible to be dogmatic on the future of private consumption and investment plans. These factors will, I hope, be borne in mind as qualifications to the prognostications contained later in the article.

The first part of this article describes the economic trends of the immediate past and the second part attempts an estimate of the trends of the immediate future. A final section is devoted to a consideration of the implications of these future trends for economic policy.

1. *Recent Trends*

Employment

The state of the labour market is, perhaps, the simplest indicator of the state of internal balance. The table below contains the relevant statistical series.

1. See R. I. Downing: "The Australian Economy, March 1956", *Economic Record*, May 1956, pp. 1-27. D. C. Rowan: "The Australian Economy, September 1956", *Economic Record*, November 1956, pp. 189-210.

TABLE I

Employment

Year and month	Unfilled vacancies registered with Commonwealth Employment Service	Numbers unemployed registered for employment with Commonwealth Employment Service	Numbers on unemployment benefit	Civilian employees (excluding Rural and Household Domestic)	
				Males	Females
	'000	'000	'000	'000	'000
1954–55 Sept.	55·5	16·2	3·9	1,953	715
Dec.	63·7	15·9	3·8	1,969	732
Mar.	61·2	22·6	4·0	1,986	738
Jun.	57·6	19·1	2·7	2,001	738
1955–56 Sept.	60·2	15·1	1·8	2,003	744
Dec.	58·8	16·3	3·2	2,013	758
Mar.	44·9	30·7	6·5	2,020	762
Jun.	32·5	31·5	7·0	2,026	759
1956–57 Sept.	27·0	33·8	9·6	2,020	757
Dec.	28·8	37·9	13·3	2,023	764

Source: Commonwealth Bureau of Census and Statistics: *Monthly Bulletins of Employment Statistics.*
Department of Labour and National Service: *Monthly Reviews of Employment Situation (News release).*

Following Professor Rowan[2] we can regard the relative movements in the first two columns as a rough indicator of the demand-supply position in the labour market. From September 1954 to December 1955, the two series were stable and their absolute levels indicated an excess demand for labour. Over the same period the numbers on unemployment benefit also remained stable at the very low level of about 0·1 per cent of the labour force[3] while male civilian employment rose by about 12,000 per quarter. There is little doubt that this was a period of considerable excess demand for labour.

Early in 1956 the situation changed. There is reason to believe that this change had already begun before the economic measures of March, but these measures confirmed and hastened the change, so that by the end of 1956 unfilled vacancies had fallen to less than half and the numbers registered as unemployed had more than doubled. It is clear that the pressure on the labour market had relaxed, although too much attention ought not to be paid to the apparent excess supply of labour revealed by the figures for 1956-7. They indicate an easing of the pressure in the labour market, but cannot be regarded as measuring the extent of unemployment.[4] In addition the numbers on benefit have increased quite steeply, even allowing for the seasonal

2. *Op. cit.*, p. 193.
3. This was still somewhat above the almost unbelievably low figure of 600 in June 1951.
4. As the pressure in the labour market eases, one would expect employers to resort less to the Commonwealth Employment Service, and employees to resort more. Accordingly the absolute levels of these figures may be misleading.

influences operating in December. In absolute terms, however, the number on benefit is still very small, being only about 0·5 per cent of the labour force. There are a number of reasons why this figure understates the extent of unemployment, although the degree of understatement is uncertain. There is a waiting period of seven days before unemployment benefits are payable and there is an income means test in which the incomes of husband and wife are lumped together. In addition some unemployed persons would qualify for the old-age pension and others may prefer not to apply for benefit if they expect their period of unemployment to be short.

The rate of increase of numbers in civilian employment has slowed down—total civilian employment rising by only 16,000 between December 1955 and 1956, compared with 70,000 for the same period a year earlier. Since it is difficult, if not impossible, to define adequately "unemployment", it may suffice to note that civilian employment during 1956 increased at only about one-quarter of the rate at which it increased in 1955. Thus the evidence available makes it clear that 1956 was a year of distinct disinflation.[5]

TABLE II

Male Civilian Employment

(Excluding Rural and Household Domestic)

(thousands)

Industrial Group	Dec. 1954	Dec. 1955	Dec. 1956	Change 1954–5	Change 1955–6
Forestry, Fishing, Trapping ..	26·4	26·7	25·6	+0·3	−1·1
Mining	57·6	57·2	57·2	−0·4	—
Manufacturing	763·6	781·4	779·3	+17·8	−2·1
Building and Construction ..	201·0	205·4	210·2	+4·4	+4·8
Transport and Communication ..	302·7	309·0	310·2	+6·3	+1·2
Property and Finance	58·4	59·9	61·9	+1·5	+2·0
Commerce	281·5	288·0	287·0	+6·5	−1·0
Public Authority N.E.I.	98·2	100·1	100·9	+1·9	+0·8
Other	179·6	185·2	190·3	+5·6	+5·1
Total	1969·0	2012·9	2022·6	+43·9	+9·7

Source: Commonwealth Bureau of Census and Statistics: *Monthly Bulletins of Employment Statistics.*

Whether or not this disinflation has been accompanied by any redistribution of the labour force is also a question of some importance. The table above gives male civilian employment by industrial groups. Perhaps the most striking feature of this table is the change in the manufacturing group. During 1955 nearly one-half of the total in-

5. More recent information than that in Table I indicates a continuation of the December situation. At 1st March the number on unemployment benefit was 13,100. Unfilled vacancies had fallen to 24,300 and numbers registered as unemployed had risen to 49,400. Total employment has continued to expand slowly. The apparent widening gap between numbers seeking work and jobs available can be partly explained by seasonal factors.

crease in employment flowed into this group. During 1956 there was actually a small exodus from it. Moreover, the elimination of the flow into manufacturing was accompanied by an increased rate of entry into only the building and construction and the property and finance groups and this increased rate of entry was only very small. For the remaining groups employment increased less rapidly in 1956 than in 1955. It must be concluded that for the broad industrial groupings given above no appreciable redistribution of the labour force occurred.

Within the dominant group of manufacturing some changes have occurred. The table below, which is based on a survey of larger private factories in the mainland states, employing about 360,000 males in total, throws some light on this.

TABLE III

Changes in Male Employment in Larger Private Factories —Five Mainland States

(thousands)

Industrial Group	Dec. 1954-Dec. 1955	Dec. 1955-Dec. 1956
Building Materials	+0·8	−1·2
Basic Metals	+1·0	+1·5
Transportation Equipment	+4·5	−4·1
Other Metal Manufactures	+2·3	−4·8
Chemicals and Other Products	+0·8	−0·1
Clothing and Textiles	−1·5	+0·3
Foods and Other	+1·5	−2·1
Total	+9·4	−10·5

Source: Commonwealth Bureau of Census and Statistics: *Monthly Bulletins of Employment Statistics.*

As far as 1956 is concerned the most significant changes are the declines in transportation equipment and other metal manufactures and the increase in basic metals. But no single group, with the possible exception of clothing and textiles, gained considerably more labour in 1956 than it had done in 1955.[6] Thus it is rather doubtful whether any individual industrial group gained in 1956 a very much greater number of the increment of the labour force than it would have been able to do in the absence of a disinflationary policy. The same conclusion is derived from an examination of female employment.

However, it is likely that the easing of the pressure in the labour market permitted employers to be more selective in their recruitment, to reduce their labour-turnover and to employ their labour more effectively. Thus any redistribution of labour which may have occurred would be much more important in its qualitative than its quantitative

6. Figures for February have become available since writing the above paragraph. They indicate a continuation of the trends revealed in Table III. In any case a comparison based on December figures is more significant than one based on February figures, because factory employment ceased to expand after December 1955.

aspects and could lead to appreciable changes in the composition of national production. There is evidence that this has been so.[7]

Prices

During 1953-4 prices were relatively stable, rising only slightly. This stability persisted into 1954-5, but during 1955-6 prices began to rise appreciably and internal prices in 1955-6 were some 5 to 6 per cent higher than in 1954-5. Table IV below sets out the position in respect of retail prices.

TABLE IV

Interim Retail Price Index

(Weighted Average of Six Capital Cities)

Year and Quarter	Percentage change from preceding quarter				
	Food (a)	Clothing & Drapery	Rent	Other Items	All Groups
1954–55 Sept.	−0·2	+0·1	+1·1	+0·3	+0·2
Dec.	+0·7	+0·7	+0·4	0	+0·5
March	+1·0	+0·1	+0·4	0	+0·4
June	+0·7	+0·9	+0·7	+0·7	+0·7
1955–56 Sept.	+0·7	0	+0·8	+0·9	+0·6
Dec.	+0·3	+0·1	+0·5	+3·3	+1·1
March	+1·1	−0·1	+6·1	+0·5	+1·0
June	+2·3	+0·1	+0·8	+3·2	+1·9
1956–57 Sept.	+1·1	+0·4	+0·8	+5·0	+1·9
Dec.	−0·3	+1·4	+0·7	+1·9	+0·9
Change—					
Dec. Qr. 1954–Dec. Qr. 1955	+2·6	+1·1	+2·5	+4·9	+2·8
Dec. Qr. 1955–Dec. Qr. 1956	+4·3	+1·8	+8·5	+10·9	+5·8

(a) Excluding potatoes and onions.

Source: Commonwealth Bureau of Census and Statistics: *Interim Retail Price Index.*

One would expect, *a priori*, that movements in prices would be directly related to the degree of excess demand as indicated by trends in the labour market. However, a comparison of Tables I and IV indicates that prices were relatively stable during the period in which there was excess demand for labour, but have been rising during the quarters in which that excess demand has been disappearing. However, a plausible explanation of this can be readily offered. The pressure of internal demand was during 1954-5 largely masked by an abnormally high flow of imports which supplemented domestic supplies. This may

7. Cf. "In several industries that have cut production, total employment has fallen by only half as much as the fall in total output. This would often result from the reluctance of manufacturers to retrench staff that may be hard to replace when demand improves. Conversely, a few industries that have increased production during the year, such as the rayon-weaving industry, have been able to do this with a relatively small rise in employment." Department of Trade: *Survey of Manufacturing Activity in Australia*, October 1956, p. xii.

be taken as an explanation of the stability in prices during that year. On the other hand the lag between rising prices and rising costs may be used to explain the continuing rise in prices in 1956-7. To support this the experience of the 1952 recession may be quoted—prices continued to rise for some two or three quarters after the levelling off of economic activity.

In any event, official Australian price index numbers are rather insensitive to the pressure of domestic demand-supply. Thus the Interim Retail Price Index depends largely on movements in prices, which are either determined on the world market or are administered by public authorities. For example, increases in rents and in the charges of public utility undertakings (transport and power) are quite likely to occur in the future independently of the state of the market. Indeed during 1956, the 6 per cent rise in the index can be largely accounted for by the food and rent groups and public utility charges included in the "other items" group. Moreover, in so far as the prices of many manufactured goods tend to be cost determined, changes in money wages, which under the Australian system of wage fixation are not necessarily related to the demand situation, will after a lag directly affect those indexes in which such goods are included. Consequently, although a high level of demand will certainly make wage increases and price increases more likely, the Interim Index is likely to have to some extent an independent existence. It might not be far wrong to say that excess demand is a sufficient but not a necessary condition for increases in the Interim Index.

Table V gives additional data on price-movements.

The rate of increase of wholesale prices of home-produced basic materials and foodstuffs appears to have slackened. There was even an appreciable decrease in the index in the latter months of 1956. However, this is misleading since well over half the weight of the index is devoted to foodstuffs, the price movements of which fully accounted for the decline in the index. The wholesale price index of basic materials including imported materials but excluding foodstuffs and tobacco was stable in the last months of 1956, but rose by nearly 8 per cent over the year as a whole. In particular steep rises were recorded in the building materials and textile groups. Export prices rose steeply during 1956 and import prices rose slightly.

To sum up one may say that prices in general rose rather more during 1956 than during 1955 (6 per cent as against 3 per cent increase in retail prices) but that the rate of increase appeared to be slackening in the December quarter.[8] Needless to say, this is based on official price indexes, which do not adequately cover highly fabricated goods or direct services.

Wages

Over 1956 average earnings and nominal (award) wage rates seem in general to have just about kept pace with prices. The table

8. This is confirmed by February figures which have since become available.

TABLE V

Price Indexes

Year and Month	Percentage change from preceding period			
	Wholesale Prices		Export Prices (excluding gold)	Import Prices (c)
	Basic Materials (a)	Home-produced Basic Materials & Foodstuffs (b)		
1954–55 September ..	0	−0·3	−6·5	0
December ..	+0·3	−0·9	−2·4	+1·0
March	+1·8	+2·7	−1·1	+1·3
June	+1·2	+0·9	−2·5	−0·5
1955–56 September ..	+0·6	+0·9	−7·1	+1·3
December ..	+0·6	−1·4	+2·5	+1·0
March	+2·3	+2·3	−2·4	+0·2
June	+2·0	+1·1	+5·9	−1·0
1956–57 September ..	+3·1	+1·4	+7·5	+1·0
December ..	+0·3	−2·2	+1·7	
Change—				
Dec. 1954–Dec. 1955 ..	+4·3	+3·0	−8·2	+3·0
Dec. 1955–Dec. 1956 ..	+7·9	+2·6	+13·0	+2·0 (d)

(a) Including imported basic materials, but excluding foodstuffs.
(b) Including foodstuffs (apart from potatoes and onions) but excluding imports.
(c) Quarters.
(d) Sept. 1955–Sept. 1956.

Source: Commonwealth Bureau of Census and Statistics: *Monthly Reviews of Business Statistics, Wholesale Price (Basic Materials and Foodstuffs) Index, Monthly Index of Australian Export Prices.*
Commonwealth Bank: *Statistical Bulletin.*

below shows movements in average weekly earnings per employed male unit and in nominal wage rates for adult males. It should be remembered that the former include salaries and the latter is based on an inadequate system of weighting. Although they must be treated with caution, they are the only indicators of wages available.

In 1954-5 average earnings advanced more rapidly than award rates, but since the December quarter 1955 they have more nearly kept pace. This is in accordance with the changed situation in the labour market. However, had there been any substantial excess supply of labour, one would have expected average earnings to rise more slowly (if at all) as overtime and over-award payments were reduced and as higher awards absorbed over-award payments. This has not happened, and it lends support to the view that no substantial surplus of unemployed labour has existed during the last twelve months.

Production

It is extremely difficult to obtain any precise idea as to what has happened to aggregate production during the past twelve months.

TABLE VI

Wages

Year and Quarter	Percentage change from preceding quarter	
	Average weekly earnings (a)	Nominal Rates—Adult Males
1954–55 September	+1·8	0
December	+0·1	+0·6
March	+2·6	+1·1
June	+2·4	+0·4
1955–56 September	+1·4	+0·5
December	+1·6	+1·4
March	+0·7	+0·8
June	+1·9	+2·0
1956–57 September	+2·2	+1·3
December	+1·4	+1·3
Change—		
Dec. Qr. 1954–Dec. Qr. 1955 ..	+8·2	+3·5
Dec. Qr. 1955–Dec. Qr. 1956 ..	+6·3	+5·5

(a) Per male unit, seasonably adjusted.

Source: Commonwealth Bureau of Census and Statistics, *Monthly Reviews of Business Statistics.*

This is mainly due to the great diversity of movements in the production figures for individual products. This diversity is illustrated in the following table.

TABLE VII

Industrial Production

Percentage change of six months July-December 1956 on July-December 1955

	per cent		per cent
Black coal	+2·5	Radios	−21·1
Brown coal	+3·3	Radiograms	−26·0
Pig iron	+14·5	Car and utility bodies ..	−16·5
Refined zinc	+1·6	Chassis assembled ..	−15·8
Ingot steel	+19·8	Boots and shoes	+12·9
Electricity	+10·3	Cotton yarn	+3·4
Clay bricks	−8·2	Worsted yarn	+11·3
Cement building sheets ..	−15·9	Broad woven cotton cloth	+30·0
Terra cotta roofing tiles ..	−9·0	Beer	−4·8
Portland cement	+8·6	Tobacco, cigars and cigarettes	+5·0
Superphosphate	−21·7	Ice-cream	+0·8
Ready mixed paint ..	−1·7	Newsprint	−0·4
Refrigerators	−24·0	Floor coverings	+4·2
Washing machines	−19·9		

Source: Commonwealth Bureau of Census and Statistics, *Monthly Bulletins of Production Statistics.*

With such diverse movements an overall picture is impossible. Indeed in this situation no index of aggregate industrial production

would be likely to be satisfactory, as it would be very sensitive to the weighting system adopted. The Australian and New Zealand Bank index showed a decline in factory production for all groups of 2 per cent as between the first five months of 1955-6 and 1956-7, but this covered up great differences both between and within the industrial groupings of the index.

The Department of Trade[9] reported that manufacturing activity in October 1956 was much the same, or perhaps a little higher than in April, and went on to comment that this was the first period since 1952 that Australian manufacturing as a whole had shown no significant gain in the level of production. On balance it would probably be reasonable to say that on the whole aggregate production has remained about stationary during 1956.

But the broad pattern of the divergent movements is clear. Production increased appreciably in iron and steel and electricity and in clothing and textiles. It decreased appreciably in building materials, consumer durables and motor vehicles. To some extent this represents the kind of switch envisaged in the economic measures of last March. It is interesting to note that this switch was very much greater than the one which could have been deduced from the employment statistics discussed above. This seems to imply appreciable changes (both upwards and downwards) in productivity per man employed in different industries.

Some more detailed information on the building and motor vehicle industries may be useful as a guide to investment activity. Table VIII refers to building commencements.

The change-over during 1955 from house building to other building is clear from the above table. During 1956 the fall in new house

TABLE VIII

Building Commencements

Year and Quarter	New houses commenced		Other new buildings commenced	
	Number '000	Percentage change on corresponding quarter of preceding year	Value (when completed) £'m.	Percentage change on corresponding quarter of preceding year
1954–55 Sept.	20·0	+5·4	32·7	+51·7
Dec.	19·0	+2·9	26·3	+38·7
March	17·8	−5·5	37·3	+49·0
June	18·8	−1·6	36·5	+16·4
1955–56 Sept.	19·5	−2·4	44·0	+34·5
Dec.	18·0	−5·2	39·0	+48·5
March	17·1	−3·7	45·2	+21·2
June	16·3	−13·1	43·5	+19·3
1956–57 Sept.	16·6	−14·9	47·4	+7·6
Dec.	16·6	−7·8	36·1	−7·4

Source: Commonwealth Bureau of Census and Statistics: *Monthly Reviews of Business Statistics.*

9. Department of Trade: *op. cit.*, p. 21.

commencements accelerated and the increased activity in other building began to tail off. Although expenditure on factory and commercial buildings may have reached its peak, a recovery in house building could take place, if finance for this purpose became more readily available.[10]

Table IX refers to motor vehicle registrations.

TABLE IX

Motor Vehicle Registrations

Year and Quarter	New Motor Cars		Other New Motor Vehicles (except Motor Cycles)	
	Number Registered '000	Percentage change on corresponding quarter of preceding year	Numbers registered '000	Percentage change on corresponding quarter of preceding year
1954–55 Sept. ..	41·4	+49·2	18·7	+24·7
Dec. ..	39·2	+22·9	18·1	+24·3
March	35·5	+27·4	14·7	+13·7
June ..	44·4	+29·5	18·0	+15·1
1955–56 Sept. ..	45·7	+10·5	18·9	+1·0
Dec. ..	43·3	+10·4	18·9	+4·5
March	35·0	−1·4	16·2	+10·6
June ..	34·2	−23·1	17·0	−5·4
1956–57 Sept. ..	36·0	−21·3	15·8	−16·4
Dec. ..	38·0	−12·3	16·3	−13·7

Source: Commonwealth Bureau of Census and Statistics: *Monthly Statistics of Motor Vehicle Registrations.*

The increase in sales tax in March 1956 gave a substantial jolt to the motor-car market, but the expansion of the market had already slowed down before the Little Budget. Sales of other motor vehicles, although less affected by the sales tax, also slowed down, but about six months later than cars. However, by the December quarter of 1956, some slight recovery was evident.[11]

As a guide to movements in consumers' expenditure, data on retail sales are set out below.

The rate of increase in retail sales has slowed down appreciably and the increase in the June and September quarters of 1956 over the corresponding periods in 1955 can be entirely accounted for by price changes. Thus in real terms retail trade was running in 1956 at about the same level as 1955. Since the population has been growing by between 2 and 2½ per cent per annum, real per capita sales were somewhat lower in 1956 than in 1955.

10. It does not appear likely that the recent (March) action of the Commonwealth Bank and other banks in raising the limit of lending for housing will materially affect the *number* of new houses commenced.

11. Figures for January and February 1957 show a 6 per cent rise on the corresponding two-month period for 1956 for new motor cars registered and a 25 per cent fall for other new motor vehicles.

TABLE X

Value of Retail Sales[a]

Year and Quarter	Value £m.	Percentage change on corresponding quarter of preceding year
1954–55 September	471	+8·9
December	554	+8·4
March	478	+10·5
June	512	+10·2
1955–56 September	514	+9·2
December	597	+7·7
March	512	+7·1
June	541	+5·5
1956–57 September	539	+4·9
December		

(a) Excluding motor vehicles, etc.

Source: Commonwealth Bureau of Census and Statistics: *Monthly Reviews of Business Statistics.*
Commonwealth of Australia: *Treasury Information Bulletins.*

Balance of Payments

The most important change which has taken place in the Australian economy in the past few months is the considerable strengthening of the balance of payments. Higher exports, mainly due to the rise in the price of wool, and lower imports resulting from the lagged effect of import controls have both contributed to this. The balance on current account for the first half of 1956-7 is estimated at a surplus of £11m., as contrasted with a deficit of £115m. in the same period of the preceding year. Gold and foreign exchange holdings are estimated to have been about £425m. at the end of December 1956 compared with £373m. one year earlier.

The increase in export proceeds has been almost entirely due to wool and wheat, although metals and ores have made useful advances. The decrease in imports has fallen largely on producer goods, since finished consumer goods now make up only a relatively small fraction of total imports.

In January and February 1957 exports and imports totalled £182m. and £115m. respectively, yielding a favourable trade balance, including bullion, for the first eight months of the financial year of £167m., as compared with an unfavourable balance of £74m. for the corresponding period of the preceding year.

It now seems certain that the trend revealed in the table above will persist for the remainder of 1956-7. Import quotas were increased by £30m. per annum in the middle of January and by a further £45m. from 1st April, but the full effect is unlikely to be felt for some months and consequently the impact on the 1956-7 figures will be small. For the full year 1956-7 exports are likely to be perhaps about £940m. and imports about £710m. With net invisible debits at about £190m., the

TABLE XI

The Balance of Payments

(£m)

	1954–55	1955–56			1956–57 First Half (Preliminary)
		Year	First Half	Second Half	
Current Account—					
Exports f.o.b.	761	773	380	393	450
Imports f.o.b.	−847	−820	−414	−406	−360
Trade Balance	−86	−47	−34	−13	90
Freight payable overseas ..	−88	−103	−50	−53	−53
Other "invisibles"	−83	−71	−31	−40	−26
Balance on current account ..	−257	−221	−115	−106	11
Capital Items—					
Public and private borrowing ..	115	148	60	88	59
Movements in international reserves	−142	−73	−55	−18	70

Source: Commonwealth Bureau of Census and Statistics: *The Australian Balance of Payments 1951-52 to 1955-56.*
Commonwealth of Australia: *Treasury Information Bulletin No. 5,* January 1957.

balance of payments on current account is likely to be in surplus to the extent of about £40m. Consequently, assuming a capital inflow of about £120m. (lower than in 1955-6, mainly on account of smaller official overseas borrowing), overseas reserves are likely to rise by about £160m. to slightly over £500m. by 30th June 1957.

It is important to emphasize as Professor Rowan has done,[12] that the balance which now appears in our external accounts is in no sense external equilibrium, since it has been brought about by the operation of severe import restrictions. The "free" level of imports is probably still greater than that which our export proceeds can finance. Furthermore, the rise in our export proceeds is largely due to the 25 per cent rise in wool prices which ought not to be regarded as permanent. On the other hand from a somewhat longer term point of view small but useful advances are being made in the export of manufactures,[13] and large-scale developments of Australia's mineral resources which are now being contemplated may lift export proceeds to a permanently higher level. However, neither of these factors should be allowed to conceal the temporary and artificial nature of the present state of external balance.

The implications of the swing of about £260m. in our balance of payments are dealt with in the second part of this article.

12. *Op. cit.*, pp. 191-2.
13. See Department of Trade: *op. cit.*, pp. ix, x.

Banking

The year 1956 was one of marked restraint in bank lending, as can be seen from the following table.

TABLE XII

Trading Banks—Loans Outstanding

Year and Month	Loans Outstanding £'m.	Change from previous year £'m.
1954–55 September	841	+147
December	873	+138
March	867	+131
June	916	+138
1955–56 September	929	+88
December	919	+46
March	879	+12
June	896	−20
1955–56 September	885	−44
December	870	−49

Source: Commonwealth Bank: *Statistical Bulletins.*
Commonwealth of Australia: *Treasury Information Bulletin No. 5,* January 1957.

An expansion of advances of nearly £140m. during 1954 and of nearly £50m. during 1955 has been replaced by a contraction of about £50m. during 1956.[14] This represents a considerable change in the provision of credit to the community. The decline in bank lending over 1956 was concentrated on rural borrowers and borrowers for personal purposes (mainly housing). Lending in connection with finance or property also fell, but loans to manufacturers and public authorities rose somewhat. New money raised by Australian companies listed on stock exchanges has also been less in 1956 than 1955. On the other hand hire-purchase balances outstanding of finance companies, which had remained stable between December 1955 and June 1956, have between 30th June and 31st January 1957 increased by £18m. This is, however, only three-fifths of the monthly rate of increase during 1955.

The change in the balance of payments position in 1956-7 has had an appreciable effect on the liquidity of the trading banks. In addition the cash deficit of the Commonwealth Government was somewhat greater in the first half of 1956-7 than in the corresponding period of the preceding year. The following table gives a picture of trends in bank liquidity.

In December 1956 the trading banks were appreciably more liquid than twelve months earlier. Deposits were up by £20m., but holdings of cash, treasury bills, and Commonwealth Government securities were £43m. higher. Consequently the L.G.S. ratio was significantly higher and at 21·5 per cent was the highest December figure since 1953. Dur-

14. In February 1957 advances were £38m. less than for the corresponding period in 1956.

TABLE XIII

Trading Bank Liquidity

Year and Month	Total Deposits	Cash and Treasury Bills	Commonwealth Government Securities	Special Accounts	L.G.S. Ratio (a)	Special Accounts as ratio to Total Deposits
	£m.	£m.	£m.	£m.	per cent	per cent
1954–55 Sept.	1,429	108	152	326	18·2	22·8
Dec.	1,495	144	150	295	19·7	19·7
Mar.	1,545	188	171	295	23·2	19·1
June	1,488	114	163	280	18·6	18·8
1955–56 Sept.	1,439	103	145	265	17·3	18·4
Dec.	1,509	135	150	265	18·9	17·5
Mar.	1,516	173	155	300	21·7	19·8
June	1,440	110	156	260	18·5	18·0
1956–57 Sept.	1,427	122	156	255	19·5	17·8
Dec.	1,529	142	186	270	21·5	17·6

(a) Liquid assets and government securities (i.e. cash, treasury bills and Commonwealth Government securities) as a ratio to total deposits.

Source: Commonwealth Bank: *Statistical Bulletins.*
Commonwealth of Australia: *Treasury Information Bulletins.*

ing the December quarter 1956, £15m. of the increase in the banks' funds were called into Special Accounts. Even so, Special Accounts were scarcely higher than in the December of the preceding year. On the other hand the banks' holdings of Commonwealth Government securities were very much higher.[15]

The relatively high degree of bank liquidity is clear and it is a moot point as to how long the banks will be able to resist (willingly or unwillingly) their customers' demands for greater financial accommodation.

2. *Future Prospects*

The above analysis has revealed three main developments in the Australian economy:

1. There has been a distinct, but not substantial, disinflationary tendency.
2. In spite of this, costs and prices have continued to rise. This is because some of the factors affecting costs have, within limits, a behaviour independent of the current domestic demand and supply situation. The rate of increase slackened in the December quarter 1956, but this could be offset if there is an increase in the basic wage.
3. There has been a substantial improvement in our balance of payments.

15. The latest figures (February) indicate, as one might expect, a further increase in liquidity. In spite of a call of nearly £30m. to Special Accounts during January-February the L.G.S. ratio stood at 24·5 per cent compared with 23·1 per cent for February 1956.

Compared with 1955-6, the third of these factors will exert, to the extent to which it is not offset by the relaxation of import controls, an expansionary influence on the economy, because export incomes will be higher and the rate of inflow of imported supplies lower. This expansionary influence will be superimposed on an internal situation which is, broadly speaking, one of full employment, although not of quite the same degree of "fullness" of employment as existed twelve or eighteen months ago. To what extent will it reverse the disinflationary process of the past year and will it lead to a resurgence of inflationary pressures?

Forecasts of market demands and supplies for the year 1956-7 as a whole are not particularly helpful in attempting to answer this question. Two-thirds of that financial year is already over and any reversal of the disinflationary situation that occurs during the remaining third will be concealed in aggregate figures for the year as a whole. Accordingly I have, in the first instance, attempted to look a little further ahead and to consider the annual rates of demands and supplies which, *on the assumption of full employment*, may be expected to hold at about December 1957, i.e. in the middle of the financial year 1957-8.

Using the year 1955-6 as a base, I have estimated the possible additions to the annual rates of available supplies and of market demands in real terms, i.e. at the 1955-6 price level as far as domestic prices are concerned. I have also assumed that current economic policy and the current level of overseas prices persist. The table below sets out the estimates. The estimates involve a comparison over a two-year gap—between 1955-6 and 1957-8. I have included in the table the *ex post* results for 1955-6. The possible changes are, of course, *ex ante*.

Gross national product is assumed to rise by 2 per cent per annum for the increase in the work force and by 2 per cent per annum for increasing productivity. This appears to have been the experience of 1955-6.[16] These assumed increases, operating for two years, give an increase over 1955-6 of a little over 8 per cent. This percentage has been applied directly to gross national product.[17] Imports are assumed to be £45m. lower than in 1955-6, i.e. about £65m. higher than the current estimate for 1956-7. This takes into account the increases in import quotas which were announced on 1st April 1957. Since 1952-3 the volumes of total farm production and exports appear to have kept roughly in step.[18] If farm production is assumed to increase at the same rate as gross national product as a whole, real exports can then be assumed to rise by 8 per cent. If, indeed, farm production grows at a different rate, any error will largely cancel out in the estimate of available supplies. It follows from these calculations that the real

16. D. C. Rowan, *op. cit.*, p. 203.

17. Professor Rowan's method (*op. cit.*, p. 203) of increasing non-farm product rather than gross national product, is perhaps in principle more accurate. But the mark-up is only a rough average figure and there seems hardly any point in excessive refinement.

18. Commonwealth of Australia: *National Income and Expenditure 1955-56*, pp. 5, 9.

TABLE XIV

Possible Changes in Real Domestic Demands and Supplies Between 1955-6 and mid 1957-8

Supplies	1955–56 (a) £m.	Change £m.	Demands	1955–56 (a) £m.	Change £m.
Gross national product	5194	+425	Consumers' expenditure	3300	+260
plus Imports (b) ..	1018	−45	Public authority expenditure:		
less Exports (c) ..	−878	−70	Current	535	+25
			Public works	450	—
			Financial enterprise expenditure	50	—
			Gross private investment:		
			Dwellings	196	−15
			Other buildings and construction ..	140	−5
			Trucks, utilities, etc. ..	82	−5
			Motor cars and cycles..	186	−10
			Other capital equipment	313	−15
			Non-farm stocks ..	70	+60
			Farm stocks	12	−10
Available supplies ..	5334	+310	Market demands ..	5334	+285

(a) *Source:* Commonwealth of Australia: *National Income and Expenditure 1955-56.*
(b) Includes imports of merchandise and other payments for goods and services.
(c) Includes exports of merchandise and other receipts for goods and services.

increase in domestic production is partly offset by the fall in imported supplies and the increased outflow of exports. Available supplies rise by £310m.

Consumers' expenditure is assumed to change on four scores: (i) an increase of £135m., corresponding to the 4 per cent increase in the work force—this maintains real consumption per head of the work force but not per head of the population, which is rising by about 2·4 per cent per annum; (ii) an increase of £130m., representing that part of increased real income, due to increasing productivity, spent on consumption (assumed to be about 60 per cent of £212·5m.—in 1955-6 consumers' expenditure was 63½ per cent of gross national product); (iii) an increase of £30m., being a guess at the amount of extra consumers' expenditure arising from the increase in export income (approximately £100m.) due to the 11 per cent increase in export prices over the 1955-6 level; and (iv) a decrease of £35m., being a guess at the decrease in consumers' expenditure brought about by the higher taxation of the Little Budget (increased taxes falling on consumers' expenditure—tobacco, liquor, petrol and luxury goods—amounted to about £60m. for a full year or £45m. more than collected in 1955-6).

Government expenditure on current items is assumed to increase with population, and that on capital items is assumed unchanged in real terms, as is financial enterprises' expenditure.

As far as the first four items of gross private investment are concerned, I have taken into account the trends shown in the most recent statistical information available. Private dwellings are assumed down by 8 per cent,[19] other building by a few per cent, motor vehicles down by about 5 per cent.

The movement in "other capital equipment" may be made up of two contrary tendencies. Farm investment is almost certain to be up as a result of the higher export income referred to above, but industrial investment may fall appreciably according to the Department of Trade Survey.[20] An overall decline of £15m. has therefore been assumed.

In 1954-5 non-farm stocks increased considerably in value (by £165m.) and, since prices were comparatively stable, most of this increase must have represented an increase in volume. In 1955-6 non-farm stocks rose by £70m., but according to the paper on *National Income and Expenditure* this represented little, if any, increase in volume as prices were rising over the year.[21] The situation of the current year is obscure, but stocks are unlikely to rise. If it is assumed that enterprises will wish to hold additional stocks in proportion to the 4 per cent increase in real output assumed to take place during 1957-8, planned real stock accumulation may be put at £60m. higher than in 1955-6. This makes no allowance for the absence of build-up of stocks over 1955-6 and probably over 1956-7, although it seems possible that the stock figure for 1955-6 may have been underestimated in the national income paper. The carry-over of farm stocks in the hands of marketing authorities seems likely to be small by the end of 1956-7, and no change in the movement of farm stocks is allowed for. With this assumption the change in farm stocks will be some £10m. lower than in 1955-6.

It can be seen from Table XIV that the estimated possible changes in real supplies slightly exceed those in real demands measured from the base year 1955-6. However, the tentative nature of this analysis[22] must be stressed. The margins of error are wide. For example, a change of 1 per cent on the base figure in estimating changes in gross national product or consumers' expenditure would completely swamp the balance between additions to supplies and demands. My own feeling is that I have been liberal in estimating additions to supplies and conservative in estimating additions to government expenditure and gross private investment with the possible exception of stocks. Accordingly I believe that the range of possible outcomes for the relation between additions to supplies and demands lies somewhere between that shown in the table and an even closer balance.

19. This anticipated decline can be accounted for partly by financial stringency, partly by the reduction in the housing shortage and partly by an expected decline in new family formation resulting from the low birth-rate of the 1930's (see Commonwealth of Australia: *The Housing Situation* (Department of National Development, Canberra, 1956), pp. 32-4).

20. *Op. cit.*, pp. xii, xiii.

21. *Op. cit.*, p. 10.

22. The method of analysis used here is rather different in form from that which Professor Rowan used in the September survey article (*op. cit.*, pp. 201-5), but its object is the same.

Now 1955-6, the base year in the above analysis, opened with an appreciable degree of inflationary pressure which persisted for the first half of the year. During the second half this pressure abated, but taking the year as a whole it must be judged as one of some inflationary tendencies, characterized by a greater pressure of demands on supplies than exists currently. It follows that, *on the basis of the assumptions set out above* and bearing in mind the likely errors involved, the situation at the end of 1957 might range from one a little less active than that of 1955-6 to one similar in character. In my view, a reasonable interpretation of the implications of this state of affairs would be that we can expect the trend of economic activity for the remainder of 1957 to lie somewhere between a continuation of the current situation and a slight revival of inflationary pressures. In other words, the bias, if anything, will be in the expansionary direction. Of course, if export prices change the situation will be affected. Assuming the given volume of imports, higher export prices will add to domestic demands and lower export prices subtract from them.

There is one consideration which may be taken to cast some doubt on the possibility of a revival of inflationary pressure. Since the balance of payments has already undergone a substantial shift in an expansionary direction, we may ask why this revival has not already taken place. However, there seem to be two reasons. First, there is the lag between higher farm income and expenditure from it and the possibility that higher farm income is first used to repay farm debt. Secondly, the current rate of investment is lower than that which can reasonably be expected six months hence. This applies particularly to investment in dwellings and motor vehicles and to investment in stocks. Furthermore the need to hold stocks is less urgent when some excess capacity is in existence. It follows that the current situation is not inconsistent with the possibility of a revival of inflationary pressure later in the year.

3. *Policy Implications*

It is impossible to discuss the policy implications of the analysis in the preceding section, without first considering the impact of the changed state of the balance of payments on policy. The very great improvement in the balance of payments for 1956-7 resulted in substantial increases in import quotas as from 1st April 1957. At the new level of licensing, imports for 1957-8 will be £65m. greater than for 1956-7. During 1956-7 our overseas reserves will rise by some £160m., to over £500m. This is a relatively comfortable figure and it will be the highest June figure since 1954. Provided export proceeds and capital inflow are maintained, our overseas reserves will probably rise by another £70m. to £80m. over 1957-8.

There is little doubt that our reserves needed to be built up, but the question arises whether we should continue to augment them at such a rate. If export proceeds continue at their present level (and in view of the instability of the wool market, this may be a big if) there seems to be little reason why import controls should not be

further relaxed. In any event they should certainly not be completely removed, for our experience in 1954-5 and 1955-6 has shown that a strong speculative demand for imports for stock-piling exists, which if allowed to operate freely inevitably generates balance of payments difficulties, But increases in import quotas whenever practicable are desirable not only because they add to available supplies but also because they prevent the establishment of uneconomic industries sheltering behind a barrier of import controls,[23] and remove some of the rigidities which have grown in the economy. Under the present circumstances a further relaxation of import restrictions would be desirable provided the current high level of export proceeds continues. It would be unwise to be precipitate in further removing import controls, but later in the year we should have some idea of the trend of export proceeds. If quotas are to be increased, the pattern of increase ought to be designed with the object of encouraging exports and the development of economic import-replacing industries.

The appropriate policy for dealing with the internal situation will depend on whether or not a flow of imports, appreciably greater than the planned figure of £775m., will be permitted.

If imports for 1957-8 are held at £775m. with export proceeds remaining high, the analysis of section 2 holds without amendment. That analysis suggests that in the near future it is likely that there will be either a continuation of the current situation or a slight resurgence of inflationary pressure. This does not seem to call for any *immediate* positive monetary or budgetary action. But, given the possibility of the development of excess demand it is most important that any clamour for relaxation of credit stringency or reduction in taxation should be resisted. At least the present degree of stringency in monetary and budgetary policy should be maintained. By the time of the 1957-8 Budget it should be clearer whether any positive action to prevent the emergence of excess demand will be necessary.

If such action does prove necessary, it will involve restraining demand, for, given the volume of imports, supplies are not subject to short-term manipulation. There are a number of ways by which demand can be restrained. One view is that the inflationary bias in the Australian post-war economy is the result of the development and migration programme and that a cut in this programme is the obvious way out. With the first part of this proposition there can be little disagreement, but whether cutting back development is the right way to attack our inflationary troubles is another matter. This is a political question, but personally I believe that to retard development now is against the long-run interests of Australia and I agree completely with Professor Downing's clear arguments in favour of maintaining the rate of development as set out in the *Economic Record*, May 1956.[24] Another view is that there is room for considerable economies in

23. According to the Department of Trade (*op. cit.*, p. xxiii) there is no evidence as yet of the establishment of such industries.
24. *Loc. cit.*, pp. 24-5.

government expenditure. Again I agree with Professor Downing[25] that there is doubtless wastful spending in some fields of government activity but that a far stronger case can be made for an increase rather than a decrease in public spending on health, education and capital works.

For the reasons outlined in the preceding paragraph, it seems then that if restraint has to be exercised it will have to fall mainly on private spending and more particularly on consumer spending. To Australian economists this is an old tale, but it is still important and may be urgent, even if it does stale with the telling. In brief, in a situation where controls over capital issues, hire purchase and the like are out of the question it implies restrictive monetary and budgetary policies.

Monetary policy has now been operating within a restrictionist context for some time. Bank advances at the end of 1956 were about £50m. less than twelve months previously. If the present level of advances (allowing for seasonal fluctuations) could be held for the next eighteen months this would represent a tightening of credit relatively to an expanding economy. I doubt if anything further would be practicable, or indeed desirable. But even this may be difficult to achieve in a situation of increasing trading-bank liquidity.

A restrictive budgetary policy certainly implies higher taxation. Taxation was substantially increased by the Little Budget of March 1956 and the rates of tax were left unchanged at the new levels in the 1956-7 Budget. However, on the basis of the results of the first half of 1956-7,[26] it seems likely that for all public authorities taken together the excess of outlay over receipts for 1956-7 will be somewhat greater than for 1955-6. I must confess to a reluctance to suggest the possibility of further increases in taxation yet again, without a greater knowledge of the effective incidence of the Australian tax structure as a whole. The Australian tax system has been built up piece-meal and the time for a thorough overhaul is surely more than overdue. We ought to know a lot more about the incidence of various taxes and the extent to which they are passed on, avoided and evaded. The suggestion for a large-scale inquiry (say a Royal Commission) into the Australian tax structure and the basis for tax assessment is not a new one. It has in the past twelve months been advocated by a number of Australian economists. Such an inquiry is highly desirable.

If it becomes necessary to use the 1957-8 Budget to reduce consumers' expenditure, some rates of tax will have to be raised. Indirect taxation (e.g. sales taxes) is probably the most effective means of cutting back consumer spending. On the other hand it is usually argued that, because indirect taxes do in general bear more heavily on persons the lower their incomes, indirect taxes are less "equitable" in their incidence than income taxes. Moreover, the argument that increased taxation on higher incomes is likely to result more in cutting savings than in cutting consumption is itself not conclusive. For an

25. *Op. cit.*, pp. 18-19.
26. See *Treasury Information Bulletin No. 5*, Jan. 1957, pp. 19-24.

increase in tax rates on higher incomes combined with higher indirect taxes will at least ensure that the wealthier sections of the community contribute to national development, by transfer of part of their savings to the public sector, in the same way as those on lower incomes are forced to contribute by reducing their consumption. Consequently, if an increase in taxation is necessary, there is a strong argument on the grounds of equity for increasing income tax rates as well as rates of indirect taxation. But it should not be forgotten that, given the present system of income tax assessment, increases in income tax rates are likely to have inequitable effects as between those who can charge personal expenses to expense accounts (e.g. business executives) or as business expenses (e.g. farmers) and those who cannot (e.g. most wage and salary earners).

The discussion in the preceding paragraphs refers to the situation in which further increases in import quotas do not occur, while export proceeds remain high. However, if imports are stepped up later in the year by, say, another £50m., or if export proceeds fall, some expansion in market demand may well be required. This would call for action opposite in intention to that outlined above.

In these circumstances, I believe that housing and public works are the proper fields for expansion. This would involve some relaxation of monetary stringency, which operates in a discriminatory fashion against housing and some increases in government expenditure. Both these fields have tended to be squeezed in the past two years and both are of the greatest importance in a rapidly developing economy. It would be short-sighted to allow any increase in expenditure which an increased flow of imports might make possible to be taken out in consumer goods or in private motor vehicles rather than in the more basic requirements of the economy. For this reason tax reduction should, in my opinion, be resisted.

Finally, two comments arising from the Commonwealth Government's disinflationary policy of last year. First it is not easy to get genuine popular support for an anti-inflationary policy. This is much more than a matter of money illusion. Most people are as well off and some are better off in a year of mild inflation than in one of disinflation. Disinflation probably somewhat reduces aggregate production—some few are unemployed, some overtime is reduced and some second and third shifts are eliminated. It has even been doubted whether overall productivity per man employed rises.[27] This explains why opposition to disinflationary policies involving higher taxation, themselves directly unpalatable through the money illusion, build up an increasing popular pressure for reversal, once they are under way.

Does this mean that mild inflation maximizes production and therefore should not be restrained? In the case of an open economy this conclusion is obviously false, for no stability in the balance of payments of a country with a mild but steady inflation will be possible unless the rest of the world is also inflating at the same rate. But even

27. See D. C. Rowan, *op. cit.*, p. 203.

for a closed economy the proposition is false, for it is based on short-term considerations. It may be true that the immediate effect of disinflation is to lower aggregrate production. But even though prices rise by only say 3 to 5 per cent per annum the long-run effects of a continuing inflation on economic efficiency in all its manifestations and on savings are such that the long-run trend of production and productivity will certainly be served by disinflationary measures. Quite apart from questions of economic efficiency, there are, of course, the effects of continual inflation on income-distribution and the social structure.

Secondly, the implementation of a disinflationary policy in times of inflation is relatively simple compared with the determination of the degree of disinflation desired. A definition of internal balance as a state where the number of unfilled vacancies in the labour market roughly equals the number of unemployed seeking work is quite different from a definition of internal balance as a situation in which money wages rise no more rapidly than productivity. The latter definition most likely implies a greater number of unemployed than the former. In all probability it implies a number greater than that politically acceptable. Consequently even when a policy of disinflation is initiated it is unlikely to go far enough to achieve price stability.

Viewed as a technical problem of economics the elimination of demand inflation is in most respects the reverse of the elimination of unemployment. But in the latter case human nature is working in the same direction as economic policy. The human element can, accordingly, be very largely ignored. This is not the case when a policy of disinflation has to be undertaken and the economist cannot but feel his limitations when human nature in the form of political practicability obstructs economic good sense.

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WAGE RATES, THE COST OF LIVING, AND THE BALANCE OF PAYMENTS

Australia is a country in which the following three conditions are all fulfilled: (1) Her main exports (wool, wheat, meat, etc.) are the products of land rather than of labour; (2) these same products enter into the worker's cost of living; and (3) the money wage rate is likely to vary upwards and downwards with the cost of living. In such circumstances an improvement in the overseas demand for Australia's products will have rather complicated effects upon the distribution of incomes in Australia and upon the Australian balance of payments. The impact effect of the increase in overseas demand for Australian products will, of course, be (i) to shift the distribution of income in favour of the owners of the land used for the production of Australian exports and (ii) to improve the Australian balance of payments. But it will also lead to a rise in the price of these export products and so in the cost of living. This will lead to a rise in wage rates which will (i) redistribute income once more rather more favourably to wage-earners and (ii) will raise costs in the industries producing goods in competition with imports. As a result of this imports from abroad will be able to compete more easily with Australian products. There will be a rise in the value of imports; and, as is argued in the following paragraphs, it is by no means impossible that this increase in imports will be greater than the initial increase in exports. In such a case a permanent increase in the demand for Australia's exports could lead to a long-term strain on the Australian balance of payments.

Consider a country A which has only two factors, land and labour, and produces only two products, food and clothing. It exports food and imports clothing, food being very land-intensive and clothing very labour-intensive.

Suppose that the money price of food and of clothing are determined abroad in B (the rest of the world) in terms of the foreign currency of B. Suppose that B is so large relatively to A that A must take the prices ruling in B as given. Suppose that the rate of exchange between the currency of A and the currency of B is fixed at par and that there is a given 10 per cent *ad valorem* duty on imports of clothing into A. Then the price of food in A equals the price of food in B and the price of clothing in A is 10 per cent above the price of clothing in B.

Suppose that at these prices money wage rates and money rents in A find levels which give full employment of land and labour in A and a balanced balance of payments between A and B.

Suppose now that the price of food rises in B by, say, 20 per cent because of an increased demand for food there, the price of clothing in B remaining unchanged. The demand for A's exports rises, and the terms of trade move permanently in A's favour by 20 per cent. We want to know what effect this has on the balance of trade, the prices

of food and of clothing in A, the outputs of food and of clothing in A, the volume of employment in A, and the level of money and of real wage rates and rents in A.

Consider first what will happen if money wage rates in A are permitted to find their new equilibrium market level, i.e. without any tie to the cost-of-living index. The price of food will go up by 20 per cent in A and the price of clothing will remain constant in A. Food production will become profitable relatively to the production of clothing and factors of production will be attracted from clothing production to food production. But increased food production requires much land and little labour, while reduced clothing production releases little land and much labour. There will be a shortage of land and a plenty of labour. The rate of rent will rise relatively to the rate of wages. A higher proportion of labour to land will be used in both industries, since producers will try to economize the use of the expensive factor land and to use instead the cheap factor labour. Since the ratio of labour to land will have increased in both industries, the marginal product of labour and so the real wage rate will have fallen in terms of both food and clothing. An improvement in A's international terms of trade will have made A's workers worse off, and A's landowners will have gained the whole and more than the whole of the increase in A's real income. In so far as A's producers of food exchange their exports of food on better terms with B's producers of clothing, A's producers of food enjoy the whole of the increase in A's real income due to the improvement in A's international terms of trade; and in so far as A's producers of food exchange another part of their output of food on better terms with A's own home producers of clothing, there is a further rise in the real incomes of A's producers of food at the expense of an absolute fall in the real incomes of A's producers of clothing.

In the conditions now under examination in A, the rise in the price offered for A's food in B will lead not only to a fall in the real wage rate in A but also to a fall in the money wage rate in A. The money price of clothing will be unchanged in A, because its money price in B is unchanged and the 10 per cent *ad valorem* rate of duty on its import into B is unchanged. In order that clothing should be produced in B, the money cost of clothing in B must be unchanged.[1] Since land and labour are the only two factors of production and since the rent of land has gone up relatively to the rate of wages, a constant cost of production of clothing in B involves an absolute rise in the money rate of rent and an absolute fall in the money rate of wages.

It might be considered more realistic to build a model for Australia in which no shift of factors were possible from the clothing to the food industry. This is easily done, and does not alter our basic conclusion that a rise in the price offered for food in B will cause a reduction in the real wage rate in A, though it will no longer involve

1. This is on the assumption that the rise in the price offered for food in B is not so great as to cause A to specialize totally on the production of food.

a fall in the money wage rate in A. Suppose that land can be used for the production of food but for no other purpose, and suppose that labour can be used for the production of clothing but for no other purpose, this being merely the limiting case of extreme differences in factor proportions in the two industries. Then the amount of land in A being fixed, the output of food in A is fixed; and, similarly, the amount of labour being fixed, the output of clothing is fixed.

If now the price of food goes up by 20 per cent in B and in consequence rises by 20 per cent in A as well, the money rate of rent will also go up by 20 per cent. With the price of clothing in B and the rate of import duty into A constant, the price of clothing in A will be unchanged and in consequence the money wage in A will be unchanged. The real wage rate measured in terms of clothing will in this case be unchanged, the money wage rate and the money price of clothing both being unchanged. But the price of food has risen; and in so far as the workers who produce clothing in A purchase food from the landowners in A, the real wage rate will have fallen in A and the real incomes of the landowners will have gone up by more than the total increase in A's income due to the improvement in A's international terms of trade.

Let us start once more from the initial equilibrium before the rise in the price offered for food in B. But let us now suppose that the money wage rate in A is tied to a cost-of-living index which includes the price of clothing and of food with the result that the real wage rate is kept constant in terms of some composite bundle of these two commodities. Suppose then that as before there is a 20 per cent rise in the price offered for food in B. What will now happen?

In A once more the money price of food will rise by 20 per cent and the money price of clothing will remain unchanged, since these prices are determined by the new market conditions in B. The rate of rent of land in A will rise because the increased world demand for food will represent indirectly an increased demand for land which is the factor most needed to produce food. But now the money wage rate of labour will also be forced up because the rise in the price of food has raised the cost of living and the wage rate is tied to the cost of living. But since the money rate of rent and the money rate of wages have both been forced up, the cost of production of clothing will have been raised. On the other hand, the price of clothing imported from B has not risen. A's domestic clothing industry will be priced out of the market by a flood of cheaper imports. Indeed, in our simple model there will be no end to this process until A's clothing industry has been eliminated, and A is importing all her clothing. A deficit will thus appear on A's balance of trade and unemployment will grow in A's clothing industry.

But A's government, we may suppose, has a domestic monetary and budgetary policy aimed at preventing the growth of unemployment. Total domestic expenditure is stimulated in order to maintain employment; but this only increases the demand for imports and worsens the balance-of-payments deficit. The only remaining cure is to restrict imports either by raising the existing 10 per cent import duty

on clothing or else by adding to this duty a supplementary structure of import restrictions. When the tariff has been sufficiently raised or imports have been sufficiently restricted to raise the price of clothing in A to a level which makes A's clothing industry once more profitable, employment and the balance-of-payments equilibrium can be once more restored. We reach, therefore, the rather paradoxical conclusion that an increase in the overseas demand for A's exports of food which will permanently improve A's terms of trade and which will have the impact effect of improving A's balance-of-payments position will, after all its repercussions upon domestic prices and wage rates have worked themselves out, lead to a permanent balance-of-payments problem which can be solved only by permanent import restrictions or a permanently higher tariff.

What will have happened to real incomes in A as a result of these changes? The first point to realize is that if the initial change is a 20 per cent increase in the price offered in B for A's exports of food, then final equilibrium of employment and the balance of payments will be restored only if the pre-existing import duty is increased sufficiently to raise the price of clothing in A by 20 per cent,[2] or if import restrictions of equivalent severity are imposed. In this case the money price of clothing as well as of food would be 20 per cent higher in A than before the change. The cost of living will be 20 per cent higher and because of its tie to the cost of living the rate of money wages will also be 20 per cent higher. Equilibrium in the market now demands that the money rate of rent should also be 20 per cent higher. In this case in A's domestic productive system nothing will have changed in real terms. Outputs will be unchanged; the ratios in which the factors are employed in each of the two industries will be unchanged; and the real marginal product of each factor in terms of each of the products will be unchanged. But the money price of every factor and every product will be inflated by 20 per cent. The community as a whole will, of course, be better off because of the improvement in A's real terms of trade. Each unit of A's food exports will purchase 20 per cent more in volume of imported clothing. This gain will, however, accrue directly neither to the landowner nor to the worker whose real rewards will be unchanged in terms of both products. It will accrue to the government of A in terms of the increased revenue derived from the additional import duty—unless, of course, a system of import licensing is employed, in which case it will accrue to those lucky citizens who have received the valuable limited rights to import. The distribution of the ultimate gain thus depends upon what the government does with the margin between the unchanged price in B and the higher price in A of the clothing imported into A from B.

There are two alternative mechanisms which with our model would have exactly the same real effects as the system which we have just examined, though the monetary effects would be different.

2. This involves a rise in the existing import duty from 10 per cent to 32 per cent *ad valorem*, so that prices in A rise by 20 per cent from 110 to 132.

Suppose first that when the price of A's food in B rises by 20 per cent the foreign exchange value of A's currency is appreciated by 20 per cent so as to keep the price of food constant in A. Then the price of clothing in A will fall by 20 per cent because the price is the same in B but 20 per cent more of B's currency is exchanged for a unit of A's currency. As a result the cost of living and, in consequence, the money wage rate will be reduced in A by a fraction of 20 per cent, this fraction depending upon the weight of clothing in the cost-of-living index. But while the price obtainable for clothing has fallen by 20 per cent, the wage cost will have fallen by less than 20 per cent. Imported clothing will undercut home-produced clothing; a deficit will develop on the balance of payments; and unemployment will threaten in the clothing industry. If an expansionary financial policy is adopted to maintain full employment, this will only make the balance-of-payments deficit worse. The only cure is a higher tariff or import restrictions which will restore the domestic price of clothing to what it was. The cost of living and the wage rate will then also be restored to their previous level. Everything will be exactly as it was at home—prices of food and clothing, the wage rate, the rate of rent, and output and employment in both industries. The one real difference will be the increased revenue accuring to the government (or to the lucky recipients of import licences) from the margin between the lower prices (in A's currency) paid to the foreign producers of clothing and the unchanged prices inside A. The real result will be exactly the same as that which was achieved when the exchange rate was fixed; the only difference is that in the present case there is no rise in the general level of money prices and costs in A.

There is a second alternative mechanism which in our model will achieve exactly the same real result without any rise in the general levels of money prices and costs in A, even though the rate of exchange between A's and B's currencies remains unchanged. Suppose that an export levy or a stabilization scheme were instituted for A's food exports, such that A's food producers received an unchanged price in terms of A's currency for their exports of food when the price in B rose by 20 per cent, the 20 per cent levy on food exports accruing in revenue to A's government. Then there would be no change in the wage rate or the rate of rent in A either in money terms or in real terms; and the prices of food and of clothing would remain unchanged in A. The community would gain through the increased revenue to the government accruing from the higher price received for A's food in B.

In the preceding paragraphs we have been concerned with the effects upon the distribution of income and the balance of payments of a wage policy which maintains a given real wage rate by tying the money wage rate to the cost of living. It should be noted that our argument would apply without any modification if a wage policy were adopted (as is more nearly the case in New Zealand) to maintain the worker's share of the national income relatively to the farmer's share. Indeed, in this case our argument would have rather more general

validity, since our conclusions would follow even if the price of A's exports did not enter into the cost of living of A's workers. Thus a rise in the price of A's food exports will increase the incomes of A's landowners. From this point onwards in our analysis it makes no difference whether the money wage rate in A is raised to offset an adverse effect of the rise in the price of food on the cost of living in A or to ensure to the wage earners in A a rise in money incomes proportionately as great as that enjoyed by the landowners.

Finally, we wish to stress the great oversimplifications which we have made in our model. In the real world it may not be true that a change in the volume of Australian export and import trade will not affect the prices of her exports or imports in B's markets; it may not be true that Australian import-competing products are perfect substitutes for Australian imports; Australia exports some products which are much less land-intensive than her main primary exports; there are the factors "capital" and "enterprise" to be considered as well as "land" and "labour"; there are groups of Australian industries producing "non-tradeable" products (e.g. houses) which are neither import-competing nor exportable; and perfect competition is not the rule in all Australian markets. For this and for other reasons we have not tried to draw any conclusions about the desirability of different forms of policy in Australia. We have tried only to show that, because of certain features in the Australian economy, the good fortune of an improvement in the Australian real terms of international trade may tend to cause a fall in the absolute level of real wages, the prevention of which by a rise in money wage rates may give rise to balance-of-payments problems and so to increased restrictions on Australia's foreign trade. It is no part of our purpose in this note to attempt to answer the question whether there are alternative and preferable methods of influencing the distribution of income. The answer to this question would involve assessments of the economic, administrative, and political advantages and disadvantages of many different measures in the particular circumstances of the actual Australian economy.

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THE CALCULATION OF THE COST OF PROTECTION[1]

I

The Brigden Report and the Measurement of Excess Cost

The report on the Australian tariff produced in 1929 by a committee of economists headed by Professor Brigden[2] made two original contributions to economic thought and method. First, it developed a peculiarly Australian case for protection based on a distribution of income argument. Secondly, it attempted a thorough and detailed measurement of the "excess cost" of protection. It is this second aspect of the report which will be discussed in this paper.

The committee's calculations were exceedingly complex and involved many bold approximations. But the object here is not to consider the practical statistical techniques or the reasonableness of the various approximations but rather the fundamental principles of the whole exercise.

To the Brigden committee the "excess cost" of the tariff was the excess of the market value of the protected output over the cost of equivalent imports.[3] Protected output was that output which would cease if the tariff were removed, while the exchange rate, wages in real terms and other factor prices in money terms remained constant.

Two questions must then be answered. First, given that the volume of protected output is known, can the difference between the market value of protected output and the cost of equivalent imports be regarded as the excess cost of protection, and if it cannot, is it likely to overstate or understate the true "excess cost"? Secondly, how should the volume of protected output—the output which would not survive under free trade—be determined, and is the Brigden committee's method—with its assumptions of constant exchange rates and real wages—likely to yield an over- or an understatement of it?

The following section will outline the model developed in the Brigden report and point out its explicit and implicit assumptions. In the remainder of the paper a slightly different—but more useful—model will be employed to examine the method critically and to resolve the problem of how the "excess cost" could be assessed in any future investigation.

This paper was inspired by a suggestion in the 1955 *Annual Report* of the Tariff Board calling for another full-scale inquiry into the Australian tariff. The latter part of this paper is designed to pre-

1. I am indebted to many helpful comments and suggestions on various earlier drafts of this paper from Professor J. E. Meade, Professor H. G. Johnson, Mrs. M. F. W. Hemming, Mr. R. G. Lipsey, Mr. A. Maizels and Mr. T. M. Rybczynski. None is, of course, responsible for any errors which remain in the final result.

2. *The Australian Tariff: An Economic Enquiry*, by J. B. Brigden, D. B. Copland, E. A. Dyason, L. F. Giblin, and C. H. Wickens (Melbourne, 1929).

3. This method of determining the excess cost is recommended in the United Nations report, *Processes and Problems of Industrialisation in Under-developed Countries* (U.N. Department of Economic and Social Affairs, New York, 1955), p. 67.

pare the ground for future attempts to calculate the cost of protection in Australia or any other country. A reader who is interested only in this practical question and not in the processes of thought of a group of Australian economists twenty-eight years ago could ignore Sections II and VII.

The Brigden report is unique as a full-scale statistical study of the effects of tariffs. Other investigators have tried only to measure the height of tariff levels.[4] Hence the theorists of international trade have rarely applied themselves to this particular problem, although it can in fact be handled with the usual techniques of international trade theory.[5]

In the 1930's the Brigden committee's methods gave rise to considerable discussion. The argument of the present paper is indebted to the valuable reviews by Viner[6] and Loveday,[7] and to later articles by Gifford[8] and Reddaway.[9] But Viner and Loveday, while highly critical of the committee's methods, did not attempt to define the extent or direction of the error to which these methods might give rise and, as will be discussed in Section VII, the formal models constructed by Gifford and Reddaway did not pose precisely the same problem as that dealt with in this paper.

II

The Brigden Model. Surprising Features

The assumptions of the Brigden committee were not all clearly stated. The object of the model was to determine, first, how much of industry was dependent on protection, in the sense of being unable to survive under free trade, and, secondly, to calculate the "excess cost" due to protecting any given unit of output.

4. See League of Nations, *Tariff Level Indices* (Geneva, 1927); A. Loveday, "The Measurement of Tariff Levels", *Journal of the Royal Statistical Society*, 1929; H. Liepmann, *Tariff Levels and the Economic Unity of Europe* (London, George Allen & Unwin, 1938); J. G. Crawford, "Tariff Level Indices", *Economic Record*, 1934. A recent index of the height of the Australian tariff has been constructed by A. T. Carmody, "The Level of the Australian Tariff: A Study in Method", *Yorkshire Bulletin of Economic and Social Research*, January 1952.

5. There is a discussion of the problem in Jacob Viner, *International Economics* (Glencoe, Illinois, 1951), Ch. 11. He defines as the burden of long-run protection what will be described here as the *production cost*. He also makes allowance for the distribution of income and terms of trade effects. He does not seem to regard this burden as directly measurable.

In the *Economic Journal*, March 1950, Mr. C. H. Blagburn calculated in considerable detail the "Import Replacement by British Agriculture". On the basis of his calculations it would be possible to work out the *production cost* of protecting British agriculture. His method is similar to the type of calculation to be suggested in this paper. A note by Professor E. A. G. Robinson and Mr. R. L. Marris, "The Use of Home Resources to Save Imports", *ibid.*, draws attention to Mr. Blagburn's neglect of the terms of trade effect.

6. Jacob Viner, "The Australian Tariff", *Economic Record*, November 1929, reprinted as Chapter 4 in Viner: *International Economics*, op. cit.

7. A. Loveday, "The Australian Tariff", *Economic Record*, November 1930.

8. C. H. P. Gifford, "Protection and the Price-level in Australia", *Economic Record*, June 1934.

9. W. B. Reddaway, "Some Effects of the Australian Tariff", *Economic Record*, June 1937, followed by discussion by J. G. Crawford, S. H. Wolstenholme and W. B. Reddaway in the *Economic Record*, December 1937.

Suppose that initially there is a tariff, balance of payments equilibrium and full employment. Then the tariff is removed. Following are the effects as outlined or implied in the Brigden report.

To begin with, internal prices of imports fall, some import-competing industries or firms which had been sheltering behind the tariff go out of business, imports increase and the government loses its customs revenue. Labour and other factors of production which had been working in the formerly protected industries become unemployed, and since imports have increased while exports so far have remained unaffected, a balance of payments deficit develops.

Furthermore, if the government has no reason to alter its fiscal requirements, other taxes must then be raised to make up for the loss of the customs revenue. The Brigden committee assumes that these will be indirect taxes which raise the price-level and which differ from a tariff only in failing to discriminate against imports.

In the Brigden model the fall in prices due to the removal of the tariff is greater than the rise in prices due to the imposition of the new indirect taxes. The net effect is a fall in the price-level which is the greater the more protected output is replaced by imports.

Thus, suppose that, with a tariff, 100 units of imports and 50 units of home-produced protected output were selling in the home market at £10 per unit. But the cost of imports without the tariff is only £8 per unit, so that there is a 25 per cent tariff yielding £200 of customs revenue. When the tariff is removed protected output ceases to be economical, imports increase by 50 units and protected output falls to zero. The home market price falls to £8 per unit. The consumer is paying £300 less for the same quantity of product and the loss to the customs is £200. Then indirect taxes are raised to yield £200, raising the price from £8 to £9·33. At the end the price-level has fallen compared to the original tariff situation and consumers have gained £100. This line of argument assumes, it will be noted, that the fall in the home price of the formerly protected products does not lead to an increase in the amounts purchased.

In this model then the removal of the tariff reduces the price-level. But this is pursued further. To begin with, some of the protected products will have been materials or semi-finished goods the prices of which enter into the costs of other industries. Thus the general cost level falls. Furthermore—and this is a special feature of the Brigden model—money wages will fall. For the Brigden committee assumed a link between money wages and the cost of living which would keep real wages constant.

It follows that the removal of the tariff leads to a fall in industrial costs, including the costs of import-competing and export industries, not only because the costs of formerly protected materials fall, but also due to a fall in money wages. Therefore, some of the industries which had gone out of business due to the tariff can be re-established again, and it turns out that, when these indirect repercussions are taken into account, they were not dependent on the tariff at all. Furthermore, reduced costs in the export industries may make possible an increased

volume of exports, increased employment in export industries and—provided export prices do not fall too much—a rise in export income.

These two indirect repercussions therefore create employment and improve the balance of payments both by raising exports and by re-establishing some of the import-competing industries. The Brigden committee assumes that this improvement will not be sufficient to offset the direct effect of the removal of the tariff. It concludes that at the end of the process, when the tariff has been removed but real wages are at the same level as before, there is unemployment and (by implication) a balance of payments deficit.[10]

This, then, is the basic model which the committee used to determine how much of import-competing output is genuinely dependent on the tariff. In addition to the various assumptions already mentioned, it assumes both a constant exchange rate and no alteration in the money prices of factors other than labour.

Having determined which output is protected, the problem remains of measuring the "excess cost" due to this protection. And here the committee had a simple answer. If, to use our earlier example, the consumer has to pay £500 for the products of protected industries and the same quantity could be imported for only £400 then the "excess cost" is £100. It is the excess of the market value of protected output over the cost of equivalent imports.

The Brigden model and its definition of the "excess cost" has some surprising features, as the reviewers of the report did not fail to point out.

First, the realism of the assumption that real wages would be the same under free trade as under protection can be questioned. As Viner pointed out, it does not follow that in the absence of a tariff the same level of real wages would have been established in the first place. Furthermore, it is doubtful whether the cost-of-living link has at any time managed to keep real wages steady.

Secondly, the conclusion that if real wages are kept constant and the tariff were removed there would be unemployment implied, without proof, that the abolition of the tariff would lower the marginal product of a given supply of labour. With the real wage constant and equal to the marginal product of labour it follows that free trade would be bound to involve unemployment. The necessary formal proof was supplied subsequently in a celebrated article by Stolper and Samuelson[11] which proved that, subject to certain simplified conditions which might apply to Australia—notably that the import-competing industries are labour-intensive and the export industries land-intensive — a tariff would raise the marginal product and hence the real wage of fully-employed labour.

10. The *Brigden Report* reasons that the removal of the tariff, with real wages constant, would end protected output worth £47m. and that this would be replaced by imports of equal value. On pp. 74-81, it is then argued that alternative export production of that value is unlikely to be found. The resulting gap is stated in terms of a national income loss and not a balance of payments deficit.

11. W. F. Stolper and P. A. Samuelson, "Protection and Real Wages", *Review of Economic Studies*, 1941, reprinted in the American Economic Association's *Readings in the Theory of International Trade* (Philadelphia, The Blakiston Company, 1949).

With real wages constant in the Brigden model, a change in the tariff would not affect those wage-earners who remain employed if the tariff were removed. The whole of the effects are then borne by two broad sections of the community—first those wage-earners who depend upon the tariff for their employment, and second the non-wage-earning section of the community. Within the latter section there are likely to be many different effects, with export producers, and in particular owners of rural land, losing most from a tariff. But on balance it can be said that in this sort of model the excess cost of the tariff consists of the losses to the non-wage-earning section minus the gain to those wage-earners who owe their jobs to the tariff. The Brigden committee "lost" this latter group of people by assuming that if there had been free trade they would never have come to Australia in the first place. Hence it neglected any effects of the tariff on their welfare and measured in effect only the excess cost to the non-wage-earning section.

Thirdly, the assumption that the money prices of the non-wage factors would remain unchanged if a tariff were imposed or removed —an assumption which was never stated explicitly—means that the fall in the real income of the non-wage factors brought about by the tariff was indicated directly by the rise in the money price-level. With money rents, profits and other non-wage factor prices constant, a 10 per cent rise in the price-level due to the tariff would then mean an (approximately) 9 per cent fall in the real income of these factors. This is one reason why the effect of the tariff on the money-price-level is given so much significance in the Brigden model. But it has to be remembered that, while it is possible to say by how much the real income of the non-wage factors has fallen due to the tariff it is not possible to determine the effect on the real income of the community as a whole without attaching some kind of "welfare weights" to the three relevant sections of the community—first the non-wage-earners whose real income has fallen, second those wage-earners who stay in employment even under free trade and whose real income is unaffected, and thirdly those wage-earners who have come into employment due to the tariff.

Fourthly, the assumption of a zero elasticity of substitution between goods[12] meant that the rise in the relative home market prices of protected goods caused by the tariff would not have a significant effect on the pattern of consumption. In this way the consumption or demand effect of the tariff was neglected, a neglect which was criticized by Viner and Loveday.

Finally, there was the most important assumption of all, that not only would the removal of the tariff create unemployment and a balance of payments deficit, but that no further measures to restore employment and external balance would be taken. For a further fall in money wages or an exchange rate adjustment (not offset by a rise in money wages) was ruled out by the assumption of constant real wages. The implication was that those wage-earners who would be unemployed under free trade would not have migrated to Australia in the first place.

12. This assumption is tucked away in a footnote in the *Brigden Report*, p. 74.

III

Assumptions of an Alternative Model. Production, Consumption and Terms of Trade Effects

Some of the assumptions of the Brigden report can be considered neither realistic nor particularly convenient for analysis. Therefore an alternative model will now be constructed to provide a basis for determining what the excess cost consists of, in what direction the cost as calculated by the Brigden committee diverges from it, and how, finally, it ought to be calculated.

Assume then that real wages do not necessarily remain constant, but rather that they are adjusted so as to ensure full employment. Thus, if the tariff is removed, either money wages and other money factor prices fall until full employment and balance of payments equilibrium is again restored, or the exchange rate depreciates while money factor prices remain constant. Assume that in the calculation of the cost the effects of the tariff on the internal distribution of income can be disregarded. Thus the concern is only with the average real income of the population as a whole, a population which is given. Assume also that the elasticity of substitution between goods is not zero, so that changes in relative prices do affect the demand pattern. Finally, it will help to simplify the argument, without affecting it vitally, if the customs revenue is assumed to be replaced not by indirect but by direct taxes.[13]

These assumptions distinguish the model which follows from the model of the Brigden report. In addition it will be assumed, in common with the Brigden committee, that in the calculation of the cost the effects of the tariff on the welfare of future generations, as well as its innumerable non-economic effects, can be disregarded.

A first need is to be quite clear not only what at every point one is assuming, but also what one is trying to measure. Broadly the object must be to compare the welfare derived from a situation of completely free trade with that derived from the existing protective situation. The excess cost of protection is the extent to which welfare under free trade exceeds welfare under protection.[14]

But this excess cost will be very different according to which of the innumerable effects of a tariff one takes into account. If, for example, the calculation disregards twenty effects and measures only the net excess cost due to the remaining three, then in policy considerations the excess cost so calculated must be weighed against the net benefit

13. If full employment and balance of payments equilibrium is maintained, and provided there is no change in private savings and investment, the government surplus or deficit needs to remain constant. Therefore a decrease in customs revenue would have to be exactly balanced by an increase in other revenue or by a decrease in government expenditure.

14. An alternative formulation of the problem is to measure not the cost of the tariff but the cost of the *excess* tariff. Welfare may be maximized not under free trade but under some positive or optimum tariff level. If the tariff exceeds this level the cost of the *excess* tariff will be greater than the cost of the tariff as a whole. Indeed, welfare under protection could be greater than under free trade and yet the tariff may be above the optimum so that there is an "excess cost." When this criterion is used the central problem clearly is to reconstruct not the free trade but the optimum equilibrium situation.

or loss due to the neglected twenty effects. In our model, for example, no account will be taken of any benefits which future generations might derive from the encouragement of infant industries or from the diversification of the economy to provide against future declines in export prices. Yet the purpose of the tariff may be primarily as an investment and an insurance, and the present cost as calculated on the basis of the model must then be weighed against these future expected benefits.

Similarly, our model will disregard any effects of the tariff on the internal distribution of income.[15] Yet to achieve an internal redistribution may be one of the primary objects of the tariff, an object which could of course be achieved by other methods. The cost of the tariff as calculated—which is then the cost of achieving redistribution by tariff—should in this case be weighed against the costs of alternative methods of redistributing incomes.

In the same way the tariff may be designed primarily to maintain full employment and balance of payments equilibrium — something which *could* always be attained by internal financial policy combined with exchange rate adjustments. These alternatives have their own costs—such as the cost arising from speculative capital movements encouraged by exchange rate variations—and if they are neglected in the calculation they should be weighed against the cost. Alternatively it may of course be assumed, on the lines of the Brigden report, that the unemployment and balance of payments deficit following upon a removal of the tariff is allowed to persist. In this case the cost of the tariff would have to be weighed against the cost of unemployment and of running into external debt.

It follows that the cost of protection, if calculated subject to our assumptions, should be regarded as providing only part of the picture. Against it should be balanced the costs of alternative ways of achieving a redistribution of income, a balance of payments equilibrium, the encouragement of infant industries, and so on.

The aim of this discussion of the assumptions is to isolate three principal effects of a protective tariff. First, the tariff affects the allocation of resources within Australia. Resources have shifted out of export and other industries into the protected industries. This is the essence of the protective effect. Secondly, the tariff affects the pattern of consumption by raising the relative prices to consumers of imported and import-competing products. And, thirdly, the tariff affects the terms of trade. These three effects will be described as the *production*, the *consumption* and the *terms of trade* effects. These are the only effects which will be taken into account in the following analysis.

The terms of trade effect can be divided into its two components,

15. Either of two assumptions can eliminate the distribution of income effect. One can assume that everyone in the community holds the same share in each of the factors of production. Thus every wage-earner would also be a part-time farmer as well as a company shareholder! Alternatively, one can assume that a compensation mechanism automatically offsets any redistributive effects of a tariff. When internal relative prices change due to the protection, as they will when the protection is achieved by tariff, it must also be assumed that, at the margin, everybody has the same preferences. These assumptions still permit a change in the ratios of real factor prices.

the effect on export prices and the effect on import prices. In the case of Australia and similar countries it is the effect on export prices which is by far the most important, and it may be reasonable, at least as a first approximation, to neglect the effect on import prices.[16] It will therefore be assumed here that Australia cannot affect the prices of her imports and that the whole of the terms of trade effect operates through export prices. This assumption does not affect the main lines of the argument though it simplifies the exposition.

Now the procedure will be as follows. Section IV is devoted to considering the cost of protecting a small individual industry, an industry so small and so unimportant, both to the economy as a whole and to other industries, that any indirect effects of its protection on employment, the balance of payments, the demand for other products or the costs of other industries can be neglected. In Section V it will be converted into a large and significant industry or group of industries; hence these indirect effects must then be introduced. In this section it will be shown how the volume of output which would not survive under free trade, and which is therefore truly protected, turns out to be overstated when the indirect effects are not taken into account. In Section VI, the volume of protected output will be taken as given and it will be shown how the indirect repercussions affect the calculation of the excess cost of any given protected output. In fact Section IV will use a partial equilibrium model and Section VI a general equilibrium one. Section VII will look briefly at the models constructed by Gifford and Reddaway, and finally Section VIII will attempt to answer the central questions: does the Brigden committee's way of calculating the cost over- or understate it, and how should this cost be calculated?

IV

Partial Equilibrium Model. Producers' and Consumers' Surpluses

We begin then with a partial equilibrium model making assumptions appropriate to such models. It enables some useful conclusions to be reached with the old-fashioned concepts of *producers'* and *consumers' surpluses.*

In Fig. 1, along the X axis is measured the quantity of the particular protected product, say clothing, and along the Y axis, costs and prices. DD′ is the home demand curve for the product and HH′ the home supply curve. These curves assume that everything else in the economy—notably factor prices, prices of other goods, and money incomes—are constant. FF′ is the foreign supply curve, on the assumption that Australia cannot influence world prices of clothing. Since the demand for exports will not enter this partial equilibrium picture, this assumption means that there is no terms of trade effect in the model.

In the absence of protection the price will be OF and total home

16. Actually the Brigden committee made a small allowance for the terms of trade effect on import prices (*Brigden Report*, p. 41), but neglected—for reasons which will be discussed below—the effect on export prices.

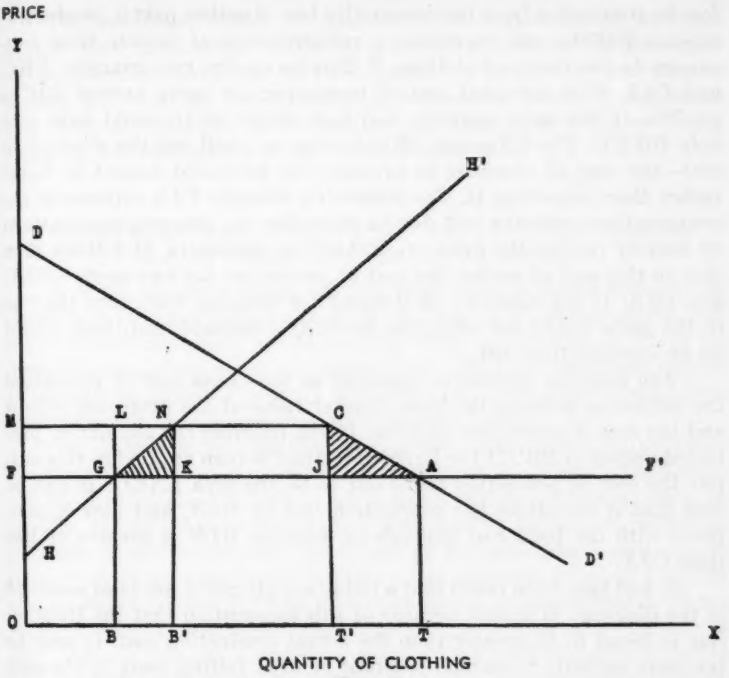

FIG. 1

consumption OT, of which OB is home-produced and BT imported. If a tariff FM/OF is imposed home production rises to OB′, home consumption falls to OT′ and imports fall to B′T′.

Now the stage is set for some geometrical juggling. The rise in the home price due to the tariff has caused a loss in *consumers' surplus* of MCAF. This represents a loss incurred by the consumers of clothing.[17] Part of this loss goes in customs revenue NCJK and can there-

17. The *consumers' surplus* obtained from a purchase of OT of clothing at a price OF is the whole area under the demand curve up to A—i.e. DATO—minus the cost, OFAT. It is thus DAF. Similarly the *consumers' surplus* obtained from a purchase of OT′ at a price OM is DCM. The difference between the two *consumers' surpluses*, and hence the direct loss to the consumers from the rise in price due to the tariff is MCAF. The main assumption involved in this concept is that the marginal utility of money is constant. Thus it assumes that the amount which consumers spend on clothing does not significantly affect their real income. The general argument is that the area under the demand curve indicates what consumers are willing to pay for the product, and hence what satisfaction they derive from it, while the price multiplied by the quantity indicates what they actually have to pay.

The limitations of this approach must be stressed. First, it requires the demand curve to be defined as a "constant utility" curve. Secondly, it neglects all cross-effects on other goods. Not only must it be assumed that the particular product does not enter significantly into the costs of other products, but, as Professor H. G. Johnson has pointed out to me, all cross-effects through demand must be neglected. Thus the demand for other goods may rise or fall as a result of the tariff and this can modify or increase the loss in *surplus*. If the demand curve for the product is of unit elasticity there would be no *net* move into or out of other goods, so then one might perhaps argue that this effect would be negligible.

fore be subtracted from the community loss. Another part is *producers' surplus* FMNG, and represents a redistribution of income from consumers to producers of clothing.[18] This leaves the two triangles NKG and CJA. Now the total cost of producing the extra output BB′ is BB′NG. If the same quantity had been imported it would have cost only BB′KG. The difference NKG is what we shall call the *production cost*—the cost of choosing to produce the protected output at home rather than importing it. The remaining triangle CJA represents the *consumption cost*—the cost due to distorting the consumption pattern by unduly raising the price of clothing to consumers. It follows then that in this sort of model, the cost of protection has two parts—NKG and CJA. If the elasticity of demand for clothing were zero the rise in the price would not affect the quantity consumed and there would be no consumption cost.

The Brigden committee regarded as the excess cost of protection the difference between the home market value of the protected output and the cost of equivalent imports. In the diagram the amount of protected output is BB′. If the Brigden method is then applied to this output the cost of protection turns out to be the area LNKG. It can be seen that it overstates the production cost by GLN, and how it compares with the total cost depends on whether GLN is greater or less than CJA.

It will have been noted that a rising supply curve has been assumed in the diagram. It is only because of this assumption that the Brigden cost is found to be greater than the actual production cost. It may be far more realistic to assume constant or even falling costs in the sort of industries which Australia protects, and undoubtedly this was the committee's implied assumption. If constant costs operate over the whole range of the home supply curve and the tariff were just sufficient to enable the protected industry to cover its costs, the home supply curve would coincide with the horizontal line MC. Protection would put an end to imports and the production cost would be equal to MCJF. This would be the cost as calculated by the Brigden committee. It would fall short of the total cost by the consumption cost CJA. Exactly the same applies if costs are falling. Protection would put an end to imports and the Brigden method would correctly yield the production cost, provided the price is equal not to the *marginal* but to the *average* cost of home production. Another possibility is that constant costs operate up to a certain output, say OB′, and then costs start rising. In this case the supply curve would be MNH′, the protected output would be OB′, and again the production cost would be equal to the Brigden committee's excess cost MNKF. In this case imports would continue under protection.

18. The *producers' surplus* obtained from selling a quantity of output OB at a price OF is the total sales revenue FGBO minus the area under the supply curve—the total cost HGBO. It is thus HGF. Similarly the *producers' surplus* obtained from selling OB′ at price OM is HNM, so that the increase in output from OB to OB′ at the higher price yields producers the additional surplus of FMNG. This concept rests on the assumption that the supply curve indicates the marginal cost of production at various outputs.

The conclusion which emerges so far is that in so far as home prices reflect the average cost of the protected output the Brigden committee's method yields the partial equilibrium production cost of protection. But in so far as rising costs operate in the protected industries it is likely to overstate the production cost, though in doing so it may make up for the neglect of the consumption cost.

V

Indirect Repercussions. Effects on Costs of Other Industries and on Balance of Payments Equilibrium

Now we can come to the indirect repercussions which arise if our clothing industry is sufficiently large or if a number of industries, perhaps individually small but collectively large, are protected. These indirect repercussions are of two types; both affect the volume of output which can be regarded as truly protected, and both have already been referred to in the discussion of the Brigden model.

The first indirect repercussion arises when materials or semi-finished goods are being protected. A tariff upon the import of materials has an effect similar to that of an indirect tax on materials. Such an indirect tax raises the costs of the material-using industries, including perhaps import-competing (protected or non-protected) and export industries. From their point of view it has the same effect as a rise in money factor prices. It is an effect similar to an appreciation of the exchange rate. It will lower the volume of exports and raise the volume and value of imports. Thus it is possible that some import-competing output needs protection only because its materials are being protected. This indirect effect of the protection of materials is therefore likely to worsen the balance of payments, although the direct effect will improve it.[19] The greater the importance of the protected materials in export and import-competing production and the more important the revenue (as distinct from the protective) effect of the tariff on materials, the more likely it becomes that the indirect effect of the protection of materials offsets or even outweighs the direct effect.

This repercussion was, as we have seen, allowed for by the Brigden committee. But, as we have also seen, the committee did not fully allow for a further repercussion. The indirect effect provides a certain stabilizing mechanism and if the tariff were removed, full employment and balance of payments equilibrium *might* be restored without any change in money factor prices or the exchange rate. But while likely to have some effect, it is unlikely to go all the way, and one can expect that unless money factor prices or the exchange rate alter, the removal of the tariff would leave the country with unemployment and a balance of payments deficit. It follows then that a further adjustment is needed. The committee failed to pursue the effects which such an adjustment is likely to have.

19. The indirect effect will worsen the balance of payments in those circumstances in which an appreciation of the exchange rate would do so, i.e. when the home and foreign elasticities of demand and supply are such that the foreign exchange market is stable.

Equilibrium could be restored either by money factor prices falling or by the exchange rate depreciating. The volume of exports will then expand, the value rising if the foreign elasticity of demand is greater than unity and falling if it is less.[20] Both the volume and value of imports will fall, import-competing industries expanding. If the foreign elasticity of demand for exports is greater than unity this adjustment will certainly improve the balance of payments, while if it is less it may still do so provided the elasticity of demand for imports is high enough and the elasticity of supply of exports is low enough. What is important to note here is that some of the previously protected industries may become economical again; so even in the absence of any protection of materials or semi-finished goods, some industries which appear to be protected when indirect repercussions are not taken into account would in fact survive under free trade.[21]

This factor increases the difficulty of determining which industries are really protected. By not adequately taking it into account—or, to be fairer, by basing its analysis on slightly different assumptions—the committee overstated the volume of protected output.

The conclusion which emerges so far, on the basis of a partial equilibrium analysis combined with an allowance for indirect effects, is the following. First, the committee has understated the cost by neglecting the consumption effect. Second, it has overstated the cost in so far as protected industries are subject to diminishing returns (i.e. in so far as the supply curve rises) so that the average cost of

20. It is characteristic of much discussion about the Australian economy that the elasticity of supply of exports, or at least of the main exports, is assumed to be very low or zero. Thus it is argued that agricultural and pastoral industries would not be able to absorb the labour set free by a removal of the tariff. This is not the place to discuss the realism of this assumption, though it is certainly very relevant to any discussion of tariff policy. It should only be stressed here that for the purpose of determining what would have happened if in the first place the tariff had not been imposed, or if it were permanently removed, it is the long-term reactions which matter. And if sufficient time is allowed—time enough for new investment to find its way into rural industries and to mature—it is by no means certain, on the basis of recent experience, that this elasticity is so low.

But if the extreme case where the elasticity of supply of exports is zero does apply, then the depreciation following upon the removal of the tariff would have no effect on the volume or value of exports. The depreciation would have to continue until all the displaced labour and capital were again employed in the import-competing industries and imports were restored to their original level. If the tariff had been uniform *ad valorem* on all imports, the final result would be a complete restoration of the tariff situation, and it would be correct to say that the tariff imposes no cost. But, of course, if the tariff had discriminated as between imports there would still be some excess cost due to the over-import of some goods relative to others.

21. Surprising as it might seem on first thought, under certain not unreasonable assumptions a tariff would lead to a balance of payments deficit. It need only be assumed first that the tariff does create an excess cost and thus a fall in real income for someone, and secondly, that money wages and other factor prices are adjusted so that the real incomes of factors as a whole (disregarding distribution of income considerations) remain constant. Then the whole of the excess cost can only be borne by external borrowing or a call on the external reserves—in other words by a balance of payments deficit.

In this sort of model, which may describe quite realistically some short-run situations, the fall in imports due to import-replacement by protected industry would be less than the fall in exports due to the movement of factors out of export into protected industry.

protected output is less than its price. And, thirdly, due to a partial neglect of indirect effects it has overstated the cost by an overstatement of the amount of output which can be regarded as truly protected.

VI

General Equilibrium Model

Effect on Exports

Although some indirect effects have now been taken into account the whole story has not yet been told. For so far all effects on the export industries have been neglected. It has been pointed out that the indirect repercussions and adjustments will stimulate the volume of exports, but the further implications of this have yet to be pursued.

What in fact has been assumed in the partial equilibrium analysis is that the true social cost involved in shifting resources out of the import-competing industries into the export industries (and so paying for the extra imports) is given by the average cost of imports. This is an assumption which cannot in fact be maintained.

For it assumes that the quantity of imports which can be obtained via the foreign market per unit of factor input in the export industries remains constant irrespective of the amount of export output. It neglects the effects of increased export output on average returns in the export industries. The export industries are subject to diminishing returns for two reasons. First, there are diminishing physical returns due to limited supplies of natural resources; and, secondly, there are diminishing value returns due to the adverse effects of increased sales on overseas prices. The first is one part of our production effect, and the second is our terms of trade effect. For both these reasons the Brigden committee's method will be found to overstate the cost of protection.

These effects on the export industries cannot, however, be handled in the framework of a partial equilibrium model. Therefore a general equilibrium analysis must now be used, enabling a confirmation and extension of the arguments used so far. The value of presenting both a partial and a general equilibrium model will become clear in Section VIII.

It will now be assumed that the volume of protected and free trade output is known, that in both the free trade and the protection situation the value of exports is equal to the value of imports, and that full employment is maintained. Hence, it is a "real" model where equilibrating adjustments of the exchange rate or of money factor prices are assumed to take place automatically.

Finally, to avoid cluttering up the diagram with too many complications, the terms of trade effect will at first be neglected and only the general equilibrium *production* and *consumption* effects of protection will be illustrated. It will thus be assumed very provisionally that Australia's export prices would be unaffected by the supplies which Australia places on the world market.

The Production Effect

Suppose then that we know that under free trade Australia would produce 100 units of wheat and 20 units of clothing. The effect of protection is to transfer labour and capital out of the wheat industry into the clothing industry so that finally 80 units of wheat and 24 units of clothing are produced. Thus the total cost of the protected output of 4 units of clothing is 20 units of wheat. If the labour and capital which are used under protection to produce 4 units of clothing were instead employed in wheat production and if the 20 extra units of wheat were then used to buy clothing in the foreign market at the given terms of trade—say one unit of wheat for one unit of clothing—it would be possible to obtain 20 units of clothing. Therefore the cost of producing 4 extra units of clothing at home rather than using the resources to produce extra wheat with which to buy the clothing abroad is 16 units of clothing (or of wheat). It is the difference between the average cost of producing the 4 units of clothing at home (namely an average cost of 5 units of wheat) and the foreign price of clothing (namely one unit of wheat), multiplied by the volume of protected clothing output. In fact the community has suffered the equivalent of an income loss of 16 units of clothing (or 16 units of wheat).

This can be fairly regarded as the *production cost* of protection. Needless to say, benefits, utility or cost cannot really be measured. All one can say is that the act of protection causes the community the same loss as would some other act—such as a given decrease in its income. Hence the community is indifferent between these two losses. But since it is likely to have a clearer conception of the loss in utility which would result from a given fall in income than from the act of protection, to state the cost in terms of an income loss will give a better indication of the "cost" of protection.

The argument is illustrated in Fig. 2, where clothing is measured along the OY axis and wheat along the OX axis. AB is Australia's home transformation curve showing the various combinations of wheat and clothing which could be produced with a given supply of fully-employed labour. An important feature of this curve is that it is drawn concave to the origin; the marginal rate of transformation between wheat and clothing is assumed to diminish. The full significance of this assumption will be discussed below. For the moment it is sufficient to note that it is through the concavity of this curve that diminishing physical reurns in both wheat and clothing, or in either of the industries alone, are put into the diagram.

It is assumed that the quadrant XOY contains a map of community indifference curves,[22] that the value of exports is equal to the

22. One hesitates even to mention so doubtful a tool of analysis as a "community indifference curve", which seems to be becoming somewhat discredited. See, for example, P. A. Samuelson, "Social Indifference Curves", *Quarterly Journal of Economics*, February 1956. But it might be noted that many of the objections to this tool rest upon distribution of income considerations which have been assumed away here, and that it is possible to avoid the concept and yet arrive at the same conclusions by the use of a somewhat clumsy verbal terminology.

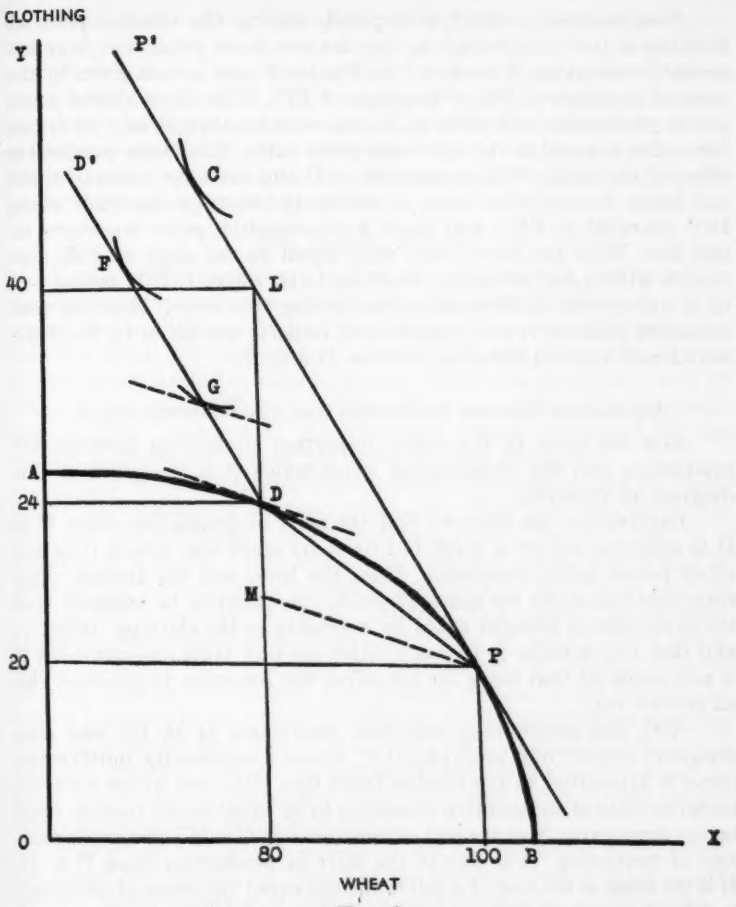

FIG. 2

value of imports, and that the given foreign price ratio or terms of trade is represented by the slope of the line PP'. This line is in fact the foreign *offer curve* which shows, with the origin at P, the quantity of clothing which the rest of the world is prepared to exchange for any given quantity of wheat. In free trade competitive equilibrium (assuming no external economies or diseconomies) the combination of wheat and clothing produced is represented by the production point P, where the marginal rate of transformation is equal to the given price ratio, and the combination consumed by the consumption point C, where PP' is tangential to an indifference curve, and where therefore the marginal rate of substitution is equal to the price ratio. The difference between production and consumption gives exports and imports.

Now suppose a tariff is imposed, raising the relative price of clothing in the home market so that the new home price ratio is represented by the slope of the line PM. The tariff rate is then given by the ratio of the slope of PM to the slope of PP′. With these altered home prices production will shift to D, where the marginal rate of transformation is equal to the new home price ratio. This is the production effect of the tariff. With production at D and the same terms of trade and hence foreign *offer curve* as before, the country can trade along DD′ (parallel to PP′) and reach a consumption point anywhere on this line. With the home price ratio equal to the slope of PM, consumers will in fact choose to trade up to G, where DD′ is intersected by a community indifference curve having this slope. Thus the consumption point is G and exports and imports are given by the horizontal and vertical distance between D and G.

Distinction between Production and Consumption Effect

Now we come to the really important distinction between the production and the consumption effect which it is the point of this diagram to illustrate.

Imagine for the moment that the shift of production from P to D is achieved not by a tariff but by some other way which does not affect prices facing consumers. Thus, the home and the foreign price ratio continue to be the same. It could, for example, be assumed that the protection is brought about by a subsidy to the clothing industry, and that this subsidy is financed either by poll taxes or—provided it is also assumed that taxes do not affect the incentive to produce—by an income tax.

With this assumption, and with production at D, the new consumption equilibrium would be at F, where a community indifference curve is tangential to the foreign trade line DD′, and where thus the marginal rate of substitution continues to be equal to the foreign (and home) price ratio. Now the cost of moving from C to F is the *production cost* of protection. It is due to the shift in production from P to D. It is the same as the cost of a fall in income equal (in terms of clothing) to LD, the vertical distance between PP′ and DD′. And LD is equal to the difference between the foreign price ratio (the slope of LP) and the average rate of transformation between D and P (the slope of DP) multiplied by the volume of protected clothing output or wheat output foregone (depending on whether prices and transformation rates are expressed in terms of wheat or clothing).

The tariff divorces the home price ratio from the foreign price ratio and hence shifts the consumption equilibrium to G. This further shift from F to G is due then to the change in home prices brought about by the protection. Clearly the indifference curve at G represents a lower level of satisfaction than the curve at F. The real income loss represented by the movement from C to G has two components—first the shift from C to F (the production effect) and second the shift from F to G (the consumption effect). With two price ratios in the picture

the measurement of this loss would then involve the familiar index number problem.

The tariff is in fact the equivalent of an indirect tax on clothing which is used to finance partly a subsidy to the home clothing industry and partly to provide revenue to the government, revenue which enables the remission of other taxes. The consumption cost reflects the burden of this indirect tax in distorting choices between the protected good (clothing) and other goods. [23]

The Brigden Method

The Brigden committee's method of measuring the cost by taking the difference between the foreign and the home price can be represented on the diagram. It is given simply (in terms of clothing) by ML, the difference between the slopes of PM and PL, multiplied by the volume of protected output. ML overstates the production cost by DM, this being the difference between the home price and the average rate of transformation of the protected output multiplied by the volume of protected output (or wheat output foregone).

Now it is worth examining more closely the reasons why the Brigden method overstates the production cost. Clearly it depends on the fact that the marginal rate of transformation between P and D is assumed to diminish. This can have two distinct causes. There may be diminishing returns in the clothing industry; and there may be diminishing returns in the wheat industry. The marginal rate of transformation diminishes if there are diminishing returns in both industries or diminishing returns in one and constant or only slightly increasing returns in the other. Diminishing returns in the clothing industry has already been allowed for in the partial equilibrium analysis, but now it can be seen that even if there were constant returns in the clothing industry—not an unreasonable assumption—diminishing returns in the export industries would still lead the Brigden method into overstating the production cost.

There is an alternative way of stating this argument which avoids the use of the concept of "diminishing returns" and is more in conformity with the sort of models used in international trade theory.

Suppose that there are constant returns to scale in both protected and export industries so that, for example, a 10 per cent increase in the input of all the factors (including land) causes a 10 per cent increase in an industry's output. Then the average rate of transformation between the industries will be constant if the relative importance of the different factors of production is the same in both industries. But if the "factor-intensities" differ, so that, for example, land is more important in the export industries and labour in the protected industries, then a transfer of factors from export to protected industries would tend to raise real wages and lower real rents and so cause costs in the protected industries to rise and in the export industries to fall.

23. Strictly speaking, this indirect tax distorts choices between clothing on the one hand and *all* other goods, including leisure, on the other. In other words, part of the consumption cost is a disincentive effect.

The Brigden method neglects this change in factor prices which would accompany a transfer of resources.

The Terms of Trade Effect

It would be possible to construct a more complicated diagram which illustrated not only the production and the consumption effect but also the terms of trade effect.[24] But it may be sufficient here to introduce the terms of trade effect by verbal reasoning.

The terms of trade effect of the tariff lessens the excess cost imposed both by the production and the consumption effect. Indeed, it is well known from the theory of the optimum tariff[25] that the terms of trade might improve sufficiently for the tariff to impose not a cost but a gain, and that if the tariff is not too high there is bound to be a gain. What is particularly important to note in this connection is that if the elasticity of demand for exports is less than unity, so that a reduced volume of exports would bring in a greater total export income, the degree of trade restriction is definitely below the optimum, although it may indeed be below the optimum even if this condition is not fulfilled. In this case the removal of the tariff unsubstituted by other forms of trade restriction would inflict a cost and not a gain.

When the terms of trade effect is taken into account foreign prices of imports and exports no more measure the average cost of additional imports or income from exports than home prices measure average costs of home production when there are diminishing physical returns. With a terms of trade effect on the export side the average price obtainable in the foreign market for an increased export output will be below the price ruling before the increase in exports. Similarly, if there were any terms of trade effect on the import side (something which is assumed away here), the average cost of the imports which would replace the protected output would be greater than the existing price of imports. Thus, as pointed out earlier, the export industries are subject to diminishing returns both because the average physical product falls as output rises and because the average price obtainable for a given unit of product declines. The terms of trade effect provides then a further reason why the Brigden method overstates the cost of protection.

Summary

It is now possible to sum up. The tariff has three effects—the production, the consumption and the terms of trade effect—of which the production and the terms of trade effects can be conveniently

24. PP′ (and DD′) would then be not a straight line but a curve rising from right to left at a diminishing rate and, when the elasticity of demand for exports becomes less than unity, turning downwards from right to left.

25. See N. Kaldor, "A Note on Tariffs and the Terms of Trade", *Economica*, November 1940; T. De Scitovsky, "A Reconsideration of the Theory of Tariffs", *Review of Economic Studies* 1941/42, reprinted in the American Economic Association's *Readings in the Theory of International Trade*, op. cit. For a derivation of the optimum tariff formula and a list of other references see also H. G. Johnson, "Optimum Welfare and Maximum Revenue Tariffs", *Review of Economic Studies* 1950/51 (No. 48).

divided into an export and an import component, and the import component of the terms of trade effect can be neglected. The partial approach takes into account only the consumption effect and the import (or protected industry) component of the production effect. The general equilibrium approach adds to this the terms of trade effect and the export side of the production effect.

Table 1 lists these effects. A plus (+) sign in the last column indicates that due to that particular effect the Brigden method overstates the cost of protecting a given volume of output and a minus (—) sign that it understates it. The question mark opposite the production effect on the import side indicates that it is not certain whether on the whole protected industries are subject to constant returns, in which case there would be no over- or understatement, or to diminishing returns, in which case there should be a plus (+) sign. The last line allows for the Brigden committee's overstatement of the actual volume of protected output, due to its failure to allow for the equilibrating adjustments needed to maintain full employment and balance of payments equilibrium.

TABLE 1

The Effects of a Tariff

Partial Effects	CONSUMPTION EFFECT			—
General Effects	PRODUCTION EFFECT	Import (protected industry)		?
		Export Industry		+
	TERMS OF TRADE EFFECT			+
	VOLUME EFFECT			+

Table 1 thus shows that if the Brigden committee's method is used, the consumption effect will lead to an understatement of the cost of protection, while the various indirect effects which are neglected in a partial equilibrium approach will lead to an overstatement.

VII

The Gifford and Reddaway Models

At this stage it is of interest to examine briefly the models published by Gifford and by Reddaway in the *Economic Record* in the 1930's. This is again a section which will be of limited value to readers not interested in the history of Australian economic thought.

The Brigden assumptions were made more explicit in the mathematical model constructed by Gifford.[26] He assumed constant real wages, constant money prices of the non-wage factors and a constant exchange rate. He did not pursue the effects of the tariff on employment or the balance of payments. He assumed a zero elasticity of substitution between goods and no terms of trade effect. He then asked what the effect of the tariff would be on the money price-level. By im-

26. C. H. P. Gifford, *Economic Record*, 1934, op. cit.

plication the result would then indicate the effect on the real income of the non-wage earners.

In the Gifford model the prices of the protected goods were assumed to rise by the tariff percentage. The export price-level remained constant. But with this rise in prices, money wages needed to increase to keep real wages constant. Prices of sheltered goods (those which do not enter foreign trade or compete with imports) had then to rise sufficiently to cover the higher money wage costs, which of course rose all the more because of the increase in sheltered prices. The final rise in prices and wages depended upon the ratio of wage-earners to others in sheltered industry (a ratio which was assumed to be constant) and upon the relative importance of exports, protected goods and sheltered goods in the price index.

This fell short as a representation of the model underlying the Brigden report only in one respect. Gifford assumed that the prices both of imports and of import-competing goods would rise by the tariff percentage, and that this rise in prices then enters the price index. But unless the tariff is completely prohibitive of imports some allowance should have been made for the increase in customs revenue. As was shown in Section II, the Brigden committee assumed that this increase in revenue would be offset by a remittance of other indirect taxes, a remittance which would lower the price-level. Therefore the rise in the price of importable goods due to the tariff should be weighted in the price index not according to the importance in consumption of *all* importable goods, but only according to the importance of those importable goods which are home-produced. In the later model in this paper it has been assumed that the customs revenue would be offset by a remission of *direct* taxes. This remission would affect not the price-level but the disposable money income of the factors. If the extra customs revenue were used for increased government expenditure or if it were offset by a remission of direct taxes, the Gifford model would remain correct as indicating the rise in the money price-level due to the tariff. But it would not indicate the fall in the real income of the non-wage factors if they are beneficiaries from government expenditure or tax remissions.

Reddaway[27] pointed out what has been stressed in the present paper, that the unemployment created by the removal of the tariff would give rise to an adjustment designed to restore full employment. He also pointed out that in the Brigden-type model the maintenance of full employment is incompatible with the assumption of constant real wages, an assumption which he therefore dropped.

But he then pursued a line of thought which, though quite correct, seems of limited practical value. His analysis was designed to show how the money price level was affected by the tariff or by how much it would fall if the tariff were removed, although in his model the money prices of the factors did not remain constant so that the rise in the money prices of goods did not indicate the excess cost. He

27. W. B. Reddaway, *Economic Record*, 1937, op. cit.

reasoned that the removal of the tariff would bring about a fall in money wages designed to restore full employment. The effect on welfare of the restoration of free trade is then indicated by the fall in prices *in relation to* the fall in money wages and other factor incomes. But to his reasoning it should be added that external balance and full employment could also have been restored by a depreciation of the exchange rate without any fall in money factor prices. Only in this case would the final change in the money price level also reflect the change in real income. The point is that the effect of protection in a full employment model is best analysed in "real" terms where monetary complications are ignored. It does not seem the best line of attack to focus attention on what the tariff does to the money price-level since this depends on the particular method of adjustment by which internal and external balance is maintained.

VIII

Practical Conclusions. Limited Aims; Method Similar to the Brigden Report

Viner and Loveday were both sceptical about the practicability of a statistical measurement of the tariff burden. Loveday, in his critical review of the Brigden report, wrote that the difficulty is due to "the problem being treated as primarily a statistical one, and not primarily one of pure economics, to the aid of which statistics might be called".[28] Viner says, in connection with the calculation of tariff indices and effects, "Too much is conceded, however, to the modern obsession for quantification and for precise measurement, when it leads to the suppression of common sense and judgment, and to the acceptance in lieu of it of arithmetically precise measurements of something which has an uncertain and variable relationship to the phenomenon which is the real subject of interest."[29]

Does the critical analysis of this paper then endorse the view that there is no adequate way of measuring the immeasurable? Cannot another full-scale review of the protectionist policy of Australia—or indeed of other countries—find some place for intelligent measurement?

This last section of the paper will attempt to define what it is that can be measured—and here it will be found that the method suggested is surprisingly close to that of the Brigden committee, although (and this is important) the claims made for the result can certainly not be as ambitious. So there are some positive and useful conclusions to be derived if only the target is not set too high.

The first practical conclusion which one must arrive at—and it is one which is not particularly useful—is that the consumption cost cannot be measured. There is no way of quantifying the burden due to the indirect tax on the protected good. All that one can do is to indicate qualitatively in studies of particular protected industries whether the effect is likely to be significant or not. In this general way the distribution of income effect could also be allowed for.

28. A. Loveday, *Economic Record*, 1930, op. cit.
29. Jacob Viner, in Chapter 11 of *International Economics*, op. cit.

The second conclusion concerns the terms of trade effect. Although a precise calculation of the static elasticity of demand for exports may not be a practical proposition it may be possible to form *some* view about it. If it is thought that the substantial increase in the supply of exports which might accompany the introduction of free trade would actually lower the price sufficiently for the value of exports to fall then it can immediately be concluded that the tariff involves a net benefit and not a cost. It may account for a net benefit even if this elasticity of demand is greater than one, and, anyway, it does not follow that other methods of trade restriction—such as a discriminatory tax on exports—would not have achieved a greater gain. But at least it would be possible to arrive at a clear conclusion about the existence of a gain even if not about its extent or whether it is the maximum gain possible.

The third conclusion is that the partial equilibrium method provides the most practical approach to a measurement of the excess production cost.

The most reasonable questions which the statisticians might ask are: First, at current prices of goods and factors and at the *given* exchange rate, which output would come to an end if the tariff were removed? Secondly, what is the excess of the *average* cost of this output over the cost of equivalent imports? The Brigden committee stated the problem in terms of *price* and not average cost, but there is no reason why in detailed investigations of particular industries some direct estimate of the approximate average cost of protected output cannot be made. It would also be possible—on the lines of the Brigden report—to make some allowance for the indirect effects of the protection of materials and semi-finished goods.

The characteristic of this type of measurement would be its neglect of all the other indirect effects—the stimulus to import-competing production caused by the price adjustment following upon the removal of the tariff, diminishing physical returns in the export industries, and the adverse effect of increased exports on the terms of trade—indirect effects which all lessen the cost of protection. These indirect effects are not in practice measurable and it must be sufficient to say that when the cost is calculated by the partial equilibrium method these indirect effects all tend to reduce the cost, and perhaps even turn it into a net benefit.

The solution is to recognize the implications of a partial equilibrium approach; while it is possible to calculate the excess cost due to protecting a particular industry it is not possible—without taking indirect effects into account—to calculate the excess cost of the tariff as a whole. A genuine partial equilibrium approach would ask: what is the excess cost due to protecting a *particular* industry, assuming that its establishment has not markedly affected total employment or the balance of payments? Such a calculation would not yield the total excess cost due to all tariffs; but it would provide orders of magnitude to indicate which particular protected industries cost the community relatively more (or benefit it relatively less), and so would enable best

use to be made of a given policy of protection. In such a calculation it could be assumed, unless there are special reasons to believe otherwise, that the indirect effects—which would always lower the costs—are proportional to the size of the protected industry.

As is clear from Table 1, such a partial equilibrium calculation of the production cost would tend to overstate the actual cost of protection because the indirect repercussions on the export and protected industries have been neglected and to understate it because the consumption effect has been ignored. And if one is prepared to venture the reasonable guess that the indirect effects are of greater importance than the consumption effect, then one can conclude that this method —and hence the calculations of the Brigden committee—tends to overstate the excess costs of the tariff.

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A PRODUCTION FUNCTION FROM FARMS IN THE WHOLE-MILK REGION OF WESTERN AUSTRALIA*

1. *Introduction*

It is the purpose of this note to report a production function of the Cobb-Douglas type which has been prepared from data collected from a sample of the 512 farms licensed to supply Perth with whole-milk. These formed part of a survey made in 1955, examining 68 randomly selected whole-milk farms in the area between Perth and Bunbury.

Financial data were incomplete for 17 of these farms, which excluded them from consideration in the function. Since the average investment for these 17 farms was considerably greater than for the remainder, this represented a bias in the data which should be considered when applying conclusions drawn from the function.

2. *The Function and its Assumptions*

This type of analysis was first used by Douglas and Cobb[1] in measuring the contribution of capital and labour to industrial output in the United States from 1899 to 1922. A recent review of the use of similar analyses in farm management research has been made by Parish and Dillon.[2]

The Cobb-Douglas type of function is commonly modified to the following form:

$$P = f(X_1, X_2, X_3, \ldots . X_n)$$

$$\text{and } P' = aX_1^{b_1}X_2^{b_2}X_3^{b_3}\ldots .X_n^{b_n}$$

where P′ represents total production P; X_1, X_2, etc., are factor inputs; and the indices b_1, b_2, etc., are the elasticities of the product with respect to factor inputs. The equation is found by fitting data, expressed logarithmically, to a multiple regression equation.

Reder[3] shows how the Cobb-Douglas type of function differs in two important ways from the traditional expression of the production function in economic theory. First, production is given in terms of value, and is related to either physical or value inputs, whereas other functions relate physical inputs to physical output. Secondly, every point of the function approximates a real farm situation, whereas in

* The authors gratefully acknowledge financial assistance from the Rural Credits Development Fund of the Commonwealth Bank of Australia, general direction from the Director of the Institute of Agriculture (Professor E. J. Underwood), statistical help and advice from Mr. N. S. Stenhouse of the Division of Mathematical Statistics, C.S.I.R.O., and willing co-operation from many farmers and their accountants.

1. Paul H. Douglas and Charles W. Cobb, "A Theory of Production", *American Economic Review*, Vol. XVIII, Supplement, March 1928, pp. 139-65.

2. R. M. Parish and J. L. Dillon, "Recent Applications of the Production Function in Farm Management Research", *Review of Marketing and Agricultural Economics*, Vol. 23, December 1955, pp. 215-36.

3. Melvin W. Reder, "An Alternative Interpretation of the Cobb-Douglas Function", *Econometrica*, Vol. 11, July-October 1943, pp. 259-64.

the traditional form of the production function the real situation is represented by only one point. Marginal value productivity as determined by the Cobb-Douglas function represents a situation of going from one farm to another, with respect to that factor, holding other factors constant. The traditional type of production function goes from a real situation to a hypothetical situation with respect to a single farm. Plaxico,[4] however, considers that the inter-farm relationship of the Cobb-Douglas function can provide a legitimate basis for farm planning where farms use similar production techniques, and produce similar combinations of products. Both of these conditions apply fairly well to the present study.

The categories of inputs have been selected to minimize multicollinearity,[5] and such correlation as may in fact exist between the independent variables is ignored when adjustments to inputs, based on the equation, are suggested.

3. *Classification of Inputs*

The input categories for the function reported here have been selected in the light of the theoretical basis of the production function, and the practical needs of the farmers. These were suggested by farm reorganization possible in the short run. This is why land, for instance, was not isolated as a separate variable. Inputs were grouped into five categories:

(i) Labour (X_1) is measured by the total number of full-time farm workers. This excludes all part-time and contract labour, and quality of and price paid for labour.

(ii) Feed Purchased (X_2) is the total expenditure (£) on purchased feedstuffs plus charges for irrigation water and less receipts for fodder sold from the farm.

(iii) Fertilizer Purchased (X_3) is the total expenditure (£) on fertilizers.

(iv) Total Investment (X_4) is the total estimated market value, made by the farmer on the day of the visit, of livestock, plant and machinery, and land and improvements.

(v) Other Expenditure (X_5) is a collection of miscellaneous expenses, excluding expenditure on fodder and irrigation water, wages and salaries, interest on debt, and capital improvements. The main items included are fuels and oils, power, repairs and maintenance, freight and cartage, rates and levies, seeds, fire insurance premiums, accountancy fees, and stationery expenses.

Total output is measured by Gross Farm Income (X_0). This is the total value of sales of all produce (except fodder sold), rent re-

4. James S. Plaxico, "Problems of Factor-Product Aggregation in Cobb-Douglas Value Productivity Analysis", *Journal of Farm Economics*, Vol. XXXVII, November 1955, pp. 664-75.

5. Lawrence A. Bradford and Glenn L. Johnson, *Farm Management Research*, New York; (John Wiley & Sons, 1953), pp. 143-5; and James S. Plaxico, *op. cit.*

ceived, payment received for contract work done off the farm, plus or minus profit or loss from the livestock trading account.

It cannot be assumed that managerial ability is not systematically related to the level of input of any single factor. A simple knowledge test was made in connection with another section of the survey. Knowledge scores increased significantly with the level of gross income. This suggests that better managerial ability was associated with farms producing at higher levels of output, and using higher levels of inputs.

The categories have been defined to minimize the degree of error, or "disturbance", of the independent variables. The variable which is likely to have the greatest source of "disturbance" is Total Investment, which is based on farmers' estimates, and might be biased through over-valuation of small farms. As explained below, however, this variable was deleted from the final equation.

A possible source of error has been minimized by not imputing any monetary value to labour, though this takes no account of labour quality. There is no real need to take account of labour by labour-months, as seasonality of employment is not marked on the whole-milk farms in this region. The small number of men employed on farms, however, enlarges the importance of errors, and makes the interpretation of the equation more difficult due to marked discontinuity in levels of labour input. The other inputs are as accurate as farm accounts permit.

Whole-milk sales represented a large proportion of total revenue of these farms, and farmers were using essentially similar production techniques. It is assumed that measurement of output by gross farm income does not introduce a large error.

4. *The Production Function*

The variables have been designated in the following manner:

X_1 = Labour	$Y_1 = \log X_1$
X_2 = Feed Purchased	$Y_2 = \log X_2$
X_3 = Fertilizer Purchased	$Y_3 = \log X_3$
X_4 = Total Investment	$Y_4 = \log X_4$
X_5 = Other Expenditure	$Y_5 = \log X_5$
X_6 = Gross Farm Income	$Y_6 = \log X_6$

Partial regression coefficients, b_1 to b_5, were calculated for the independent variables Y_1 to Y_5 on the dependent variable Y_6. These were each tested for significance by Student's t test, and b_4 was found to be not significant. The total variation due to this factor of scale appears to be sufficiently accounted for by the other factors in combination. On the basis of this finding, Total Investment was deleted from the analysis, and the partial regression coefficients of the remaining factors on Y_6 were recalculated. (Details of statistical analysis are presented in Appendix.) All of these were significant at least at the 5 per cent level. The four remaining independent variables collectively

account for 88 per cent of the total variance when the data are expressed logarithmically.

The equation calculated from these data is:

$$Y_6 = 1{\cdot}4102 + 0{\cdot}2339\ Y_1 + 0{\cdot}1333\ Y_2 + 0{\cdot}0679\ Y_3 + 0{\cdot}5508\ Y_5.$$

Alternatively, this may be expressed in antilogs as:

$$X_6 = 25{\cdot}716\ X_1^{0.2339}\ X_2^{0.1333}\ X_3^{0.0679}\ X_5^{0.5508}.$$

5. *Factor Elasticities*

The coefficients of the factor inputs in the first equation (the indices in the second equation) are the partial regression coefficients and estimate the product elasticity with respect to the particular factor. This assumes that the elasticities are constant over the whole range of inputs.

The equation suggests that whilst measuring the association between gross income and any one independent variable, and the remaining variables are held constant, a 1 per cent variation of the independent variable (X_1) is associated with a variation of approximately b_1 per cent of gross income. This is a generalized relationship for all farms, based on the existing technical framework of production. When dealing with a discontinuous input, such as labour, it is meaningless from a farm organization viewpoint to talk of a 1 per cent change in the level of the input. Also, direct causation should not be implied from an input such as "other expenditure", which is itself a miscellany of inputs.

The sum of the estimated elasticities of the four factors is 0·986, which indicates that, under the existing conditions of management, returns to scale are constant.

6. *Marginal Returns*

Elasticity coefficients are of little value for farm planning as they give no measure of input profitability. Marginal returns have therefore been calculated for the generalized equation. The details of the elasticities and these marginal returns are summarized in Table I. Marginal returns were also calculated for each factor on each farm.[6]

This calculation involves the application of elasticities from the generalized formula to the actual inputs and output of each individual farm. Although it is extremely unlikely that output elasticities are the same for all farms in the sample this calculation enables some idea to be obtained of numbers of farmers for whom marginal cost approximates marginal revenue, and for whom marginal rates of transforma-

6. This was calculated by partial differentiation of the equation with respect to the factor concerned. (The geometric means were used for the general equation, and actual values for each farm.) E.g. for X_1:

$$X_6 = aX_1^{b_1}X_2^{b_2}X_3^{b_3}X_5^{b_5}$$

$$\frac{\partial X_6}{X} = ab_1X_1^{b_1-1}X_2^{b_2}X_3^{b_3}X_5^{b_5}$$

$$= \frac{ab_1X_1^{b_1}X_2^{b_2}X_3^{b_3}X_5^{b_5}}{X_1}$$

$$= \frac{b_1X_6}{X_1}$$

TABLE I

Elasticities and Marginal Returns to Inputs

	Labour	Feed Purchased	Fertilizer Purchased	Other Expenditures
Output elasticity	0·234	0·133	0·068	0·551
Standard deviation of elasticities	0·068	0·051	0·022	0·065
Marginal return to unit input ..	£579	£0·715	£1·561	£2·651

tion of inputs into output are roughly equal. The following classifications therefore have an air of precision hardly warranted by the data, but it is suggested that they indicate the general order of maladjustment.

7. *Profitability of Inputs*

Inputs are being most profitably organized under the existing technical structure of production where the marginal rates at which the factors are transformed into the product are equal. The most profitable level for each input is where the marginal cost of the factor equals the marginal return to that factor.

In the cases of Feed Purchased, Fertilizer Purchased and Other Expenditure the unit factor cost is £1. In the case of Labour, unit cost is taken as the adult male basic wage on 30th June, 1955, for the South-West Land Division. This was £640 per annum. The 5 per cent fiducial limits about the geometric mean of the marginal return to each factor were calculated. This range of returns was used to set the upper

TABLE II

Optimum Range of Marginal Returns to Inputs

	Labour	Feed Purchased	Fertilizer Purchased	Other Expenditures
Upper limit of optimum marginal return	£721·3	£1·127	£1·732	£1·167
Lower limit of optimum marginal return	£568·8	£0·892	£0·502	£0·840

and lower limits about unit factor costs within which levels of input expenditures are arbitrarily considered to be optimal. These limits are given in Table II.

Labour.—On 19 of the 51 farms (39 per cent), the marginal return to labour exceeded the optimal wage range and on 22 farms (43 per cent) it was less. It appears that for the region as a whole labour is being employed at about the economically correct level (Table I). Nevertheless, it appears that there is scope for profitably employing more labour on two-fifths of the farms, and less labour on another two-fifths. But in view of the highly discontinuous nature of labour and the small range of labour inputs, the generalization of the original

equation may not be a valid basis for expected returns to new levels of labour input.

Feed Purchased.—On 12 farms (24 per cent) marginal returns to feed purchased were higher than marginal cost, and lower than marginal cost on 36 (71 per cent). Thus there appears to be scope for a profitable expansion of this input on almost a quarter of the farms. However, nearly three-quarters of the farmers appear to have been overspending on purchased feedstuffs. Under the Milk Board's quota system operating in 1955 the quantity of milk a farmer could sell at the higher whole-milk price was set by the amount he produced during the months of March, April and May. It can be shown that it paid to overfeed in these months so as to maximize profits over the whole of the year. With the absence of any reliable input-output response data on concentrate feeding of dairy cattle, and the added complexity of the marginal analysis under this quota system, farmers appear to have overshot the mark in trying to set the most profitable output.

Fertilizer Purchased.—On 10 farms (20 per cent) marginal returns to fertilizer were higher than marginal cost, and lower than marginal cost on 2 farms (4 per cent). The standard deviation of the marginal returns to this factor is much larger than for the other two factors considered. Yet it still appears that a fifth of the farmers could have profitably increased the rate of top-dressing, or the area top-dressed.

Other Expenditure.—The mean marginal return to "other expenditure" is very high (£2·65). All farms received marginal returns to "other expenditure" larger than marginal cost. Many of the items included in this category are those associated with pasture development and improvement, and it may prove highly profitable to direct expenditure into these channels. Moreover, the analysis suggests, *ex post* at least, that there is little justification for the attitude, frequently expressed by farmers, that since the general cost structure has moved adversely relatively to the price of whole-milk, it therefore does not pay to expand general farming expenditure.

The manner in which high, low or optimal marginal returns are combined is shown in Table III. Other expenditure is not included in this table because marginal returns to this factor were greater than marginal costs for all farms.

On only one farm were marginal returns for all three factors within the optimal range. Hence there appears to be considerable scope for the reorganization of levels of various inputs within the farms. This is particularly apparent between feed and fertilizer inputs. All of the farms which were underspending on fertilizer appeared to be overspending on purchased feed. A readjustment in these inputs should prove profitable without any additional expenditure.

8. *Conclusion*

Although the generalized regression equation was referred back to the individual farms to find the distribution of marginal returns

TABLE III

Distribution of Farms by Marginal Returns to Labour, Feed and Fertilizer Purchased

Marginal Return to Purchased Feed	Below Optimum	Optimum	Above Optimum	Total Farms
Marginal Labour Productivity Below Optimum and Marginal Return to Fertilizer				
Below Optimum	1			1
Optimum	5	2	6	13
Above Optimum	8			8
Total	14	2	6	22
Marginal Labour Productivity Optimum and Marginal Return to Fertilizer				
Below Optimum				
Optimum	4	1	5	10
Above Optimum				
Total	4	1	5	10
Marginal Labour Productivity Above Optimum and Marginal Return to Fertilizer				
Below Optimum			1	1
Optimum	16			16
Above Optimum	2			2
Total	18		1	19
Total	36	3	12	51

to inputs, it should not be implied that the results of the function can be applied to any one farm. The results, however, point to the types of profitable readjustments which could possibly be made. From the viewpoint of both the farmer and the whole community they suggest that without any new technical developments it is possible to expand production by the readjustment of existing expenditures, and the existence of profitable avenues for additional expenditure. There is no reason to believe that similar situations do not occur in other farming areas.

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Appendix

The multiple regression analysis, with Total Investment (X_4) deleted, is shown below:

Partial Regression Coefficients

	Standard Deviation	t
$b_1 = 0{\cdot}2339$	0·0681	3·434†
$b_2 = 0{\cdot}1333$	0·0507	2·629*
$b_3 = 0{\cdot}0679$	0·0223	3·045†
$b_5 = 0{\cdot}5508$	0·0651	8·460‡

Analysis of Variance

Variation due to	d.f.	S.S.	M.S.S.	V.R.
Regression	4	2·91261754	0·72815438	81·184‡
Deviations	46	0·41258341	0·00896920	
Total	50	3·32520095		

Regression Equation

$$Y_e = 1{\cdot}4102 + b_1Y_1 + b_2Y_2 + b_3Y_3 + b_5Y_5$$

For Estimation

$$Y_e = 1{\cdot}4102 + 0{\cdot}2339\,Y_1 + 0{\cdot}1333\,Y_2 + 0{\cdot}0679\,Y_3 + 0{\cdot}5508\,Y_5$$

Coefficient of Determination (D)

$$D = R^2 = 0{\cdot}8759$$

* Significant at 5 per cent level.
† Significant at 1 per cent level.
‡ Significant at 0·1 per cent level.

ARBITRATION IN A NEW KEY

The New Legislation in Perspective

1. *The Nature and Aims of the New Legislation*

Australia's new federal legislation on industrial arbitration is meant to be more than a mere expedient to meet the problem caused by the High Court's decision that the old federal Arbitration Court could not validly exercise judicial powers. That decision, the Government has stated, will be appealed to the Privy Council because its reference extends quite widely to other federal legislation not concerned with arbitration. The changes made in the federal arbitration machinery, however, are intended to encourage conciliation and "streamline" the working of the system.

Although 32 amending measures have been introduced into the Commonwealth Parliament since the foundation of the system in 1904, the present legislation and that of 1947 have been the only two attempts to make fundamental changes in its structure (except the proposals to abolish it altogether). Even these two major alterations represent the culmination of gradual trends rather than radical innovations: they are revisions rather than revolutions.

Both revisions gave expression to two perennial themes in Australian industrial arbitration legislation, the reduction of legalism and the encouragement of conciliation. These two objectives have been emphasized ever since the 1890's when Australian parliaments first contemplated establishing government machinery for the regulation of industrial disputes. In 1891 Parkes spoke of the need for conciliation to be "divested of the very fragrance of the lawyer"[1] and regarded it as essential that the same bodies should not have to arbitrate as well as conciliate, "because the two things are altogether different".[2] These views have commanded widespread agreement throughout the history of arbitration, but it has been found very difficult to give effect to them. (Incidentally it is only fair to state that this difficulty and the reasons for it were both cogently stated in the debate in which Parkes was speaking.)

The 1947 revision aimed at encouraging conciliation as well as reducing legalism by simplifying procedures and greatly increasing the role of the "practical men" compared with the judges. In retrospect, however, its main effect appears to have been to replace "legal" arbitration by "practical" arbitration, except for the central issues of the basic wage for men and women, standard hours, annual leave, sick leave and long-service leave. The 1956 revision carries further the emphasis on "practical" men and attempts to separate the functions of conciliation, arbitration and enforcement.

Enforcement is placed entirely in the hands of a new agency, the Commonwealth Industrial Court, which will exercise the same penal

1. *N.S.W. Parliamentary Debates* (1891-2), p. 6478.
2. *Debates*, p. 5558.

powers as the old Arbitration Court. The new Industrial Court will also have the same powers of interpretation of awards and regulation of industrial organizations as the old Arbitration Court possessed. The Court of Conciliation and Arbitration is retained in the new legislation, but the Minister indicated in his Second Reading speech that this was done for reasons of legal procedure connected with the appeal to the Privy Council and it would appear that when the appeal has been settled, the revised system will operate without the old Court.

The conciliatory and arbitral functions are divided, as in the old Act, between judges and "practical" men. A Commonwealth Conciliation and Arbitration Commission is established, consisting of a president and not less than five commissioners. The president and deputy presidents will have the status and legal qualifications of judges, while the commissioners will not necessarily have any legal qualifications—in fact the Minister referred to them as lay members. Certain of the former judges of the Arbitration Court have already become the first presidential members and the former conciliation commissioners the first lay members. For the most part, the functions of presidential and lay members of the Commission correspond to those previously exercised by the Arbitration Court and Conciliation Commissioners. Both may arbitrate as well as conciliate, but the issues of male and female basic wage standard hours and long-service leave are reserved for the Commission in presidential session. Members will be allocated to particular industries by the president, who may also allocate deputy presidents to deal with certain particular disputes (he may deal with such himself) and to deal with disputes affecting the Snowy Mountains hydro-electric project, the maritime industry and the stevedoring industry.

Some novel features are embodied in the provisions for appeals from the decisions of a commissioner and for the reference of a dispute from a commissioner to a larger body. (In this context, "commissioner" includes a presidential commissioner.) An appeal may be heard by the Commission when it considers a matter of great public importance is involved. For this purpose the Commission will be constituted of not less than three members, at least two of whom will be presidential members, the intention being to include a lay member when there is one who has some relevant practical experience (other than the member whose decision is being appealed against).

If a party to a dispute contends that the dispute is of great public importance, the commissioner concerned must consult the president who decides whether the dispute should be referred to the Commission, which in these circumstances will be constituted of three members, at least one being a presidential member and, where practicable, one being the commissioner concerned. This procedure aims at overcoming the lack of co-ordination caused by the 1947 revision, which made it possible for a single commissioner to make a pattern-setting decision that might have ramifications throughout the whole economy.

The revision preserves the previous functions of Local Industrial Boards and Boards of Reference, but in addition provides for con-

ciliators, who are made available whenever their assistance is requested by the parties or is considered desirable by the commissioner concerned. A conciliator may only report to the Commission in terms agreed to by the parties, thus preventing him from prejudicing the subsequent arbitration. However, if the parties cannot agree on part of a dispute, and request the conciliator to arbitrate on this, he may do so provided the parties agree to abide by his decision. This last provision seems inconsistent with the Minister's claim that the provision of conciliators would overcome the tendency of conciliation to be stultified when the conciliator and arbitrator are the same person, but the requirement that both parties consent may preserve the conciliatory atmosphere. Agreements made by the parties, with or without the assistance of a conciliator, must be certified by the Commission before they have the force of an award, as under the old Act.

Conciliation also received renewed emphasis in a revision of the aims of the Act, the first three of which now read:

> "(a) to promote goodwill in industry;
>
> (b) to encourage conciliation with a view to amicable agreement, thereby preventing and settling industrial disputes;
>
> (c) to provide means for preventing and settling industrial disputes, not resolved by amicable agreement, including threatened, impending and probable disputes, with the maximum of expedition and the minimum of legal form and technicality".

Although most of these phrases appeared in the old Act, the separation of the conciliation objective from the settlement of disputes not resolved amicably is new.

The Minister stated in his Second Reading speech that the Government hoped that the presidential members of the Commission would dispense with wigs and gowns when sitting with their lay colleagues. He said that the Government considered that in the sittings of the Commission there should be far less of the atmosphere of a law court, and for this reason had limited legal representation before the Commission (but not before the Industrial Court). Counsel may appear before the Commission in any case in which the Attorney-General has intervened, but in other cases the parties and the Commission must approve their appearance, although the Commission may override the parties if it considers that the issues warrant the appearance of counsel.

The Office of Economic and Industrial Research provided for by the 1947 amendment, but never established, is omitted from the revised system.

No major change is made in the regulation of the internal affairs of registered unions and employer associations, except that provision is made for conscientious objectors to union membership, where the Commission orders preference to unionists.

Special provisions are made in the new Act for the maritime and stevedoring industries and Snowy Mountains project. The powers of

the Commission are exercisable in these industries by a presidential member only, but extend beyond disputes and impending disputes to any "industrial matter" submitted to it, in so far as these relate to foreign or interstate commerce. In the stevedoring industry, the Commission may not make an award or order which is inconsistent with an order of the Stevedoring Industry Authority (set up under the Stevedoring Industry Act 1956) unless the Authority agrees. A reciprocal obligation is laid upon the Authority by the Stevedoring Industry Act.

The powers of the Coal Industry Tribunal and the Public Service Arbitrator have been left unchanged by the revision, amending legislation being necessary only to make consequential changes in terminology, etc.

Although beyond the scope of this article, it should be noted that the Stevedoring Industry Act 1956 continues federal government regulation of the waterfront but clarifies the functions of the regulatory body and makes other important changes in the organization of waterside employment which are of considerable significance for relations in the industry.

To judge the significance of these changes in the federal industrial disputes machinery, and their probable effects upon industrial relations, it is necessary first to assess the role of compulsory arbitration in shaping industrial relations in Australia. This is no easy task, in view of the paucity of research on the working of the arbitration system and the difficulty of separating the operation of compulsory arbitration *per se* from the whole fabric of social and economic institutions of which it is part. However, as a first step, a brief review of the American and British systems of industrial relations will help disentangle those aspects of Australian industrial relations that are attributable to compulsory arbitration from the aspects that would exist in its absence.

2. *The Lessons of American and British Experience*

The outstanding feature of *American* industrial relations is the relatively small sector of the economy that has been unionized. In 1900, 3 per cent of the American civilian labour force were union members and in 1953 the figure had risen to 26·8 per cent.[3] The comparable Australian figures are 6·1 per cent in 1901 and 60 per cent in 1952.[4] Collective bargaining between unions and employers directly covers only some 50 per cent of America's civilian labour force.[5] In Australia over 90 per cent of employees are covered by awards or agreements.

The impact of collective bargaining, however, has been much greater than these figures show, for a good deal of evidence suggests that the results of a limited number of key bargains in important unionized industries tend to set a pattern of wage-movements which

3. I. Bernstein: "The Growth of American Unions", *Amer. Econ. Rev.*, Vol. XLIV, 1954, pp. 301-18.
4. *Commonwealth Labour Reports.*
5. F. Peterson: *American Labour Unions,* N.Y., Harper, 1945, p. 188.

is followed by other industries with varying degrees of precision.[6] On the other hand, unions' ability to raise wages is limited by the competition of non-union plants. For the purposes of comparison with the highly unionized Australian labour market, however, the unorganized sections of the economy may be ignored, and attention focused on the collective bargaining that occurs in America.

Collective bargaining takes place within a legal framework guaranteeing recognition of unions by employers and requiring both parties to observe the code of "fair labour practices" laid down by the Wagner Act of 1935 and the Taft-Hartley Act of 1947.[7] This code is administered by the National Labour Relations Board, and enforced by the federal courts. The Taft-Hartley Act banned some kinds of strikes (jurisdictional strikes, certain organizational strikes and secondary boycotts) and made others, which the President considers threaten national health or safety, subject to injunction for 80 days. Within 60 days a board appointed by the President must report on the facts, although it must not recommend terms for settlement of the dispute. If the dispute remains unsettled the N.L.R.B. must poll the employees to see if they will accept the employer's last offer. If they do not, the injunction expires and no further intervention occurs, unless the President reports to Congress and recommends a course of action. Government employees must not strike, and a special procedure is laid down for railway employees under the Railway Labour Act.

The code of fair labour practice guarantees union security and controls certain aspects of the internal organization of unions. The more controversial of these are the regulation of the "check-off", the regulation of employer contributions to welfare funds, and the ban on the use of union funds for political purposes and on tenure of union office by Communists. The closed shop is prohibited. American unions have established the right to collective bargaining but at the price of a certain degree of public control of their activities and internal management. It seems likely that this control will extend until it reaches a state very like that existing in Australia.

The legal status of the collective agreements made within this framework is a complex matter, the consensus now being that these agreements do possess legal force.[8] A large proportion of agreements provide for arbitration of disputes arising over interpretation of the contract during its currency,[9] and many provide penalties such as dismissal for instigators of unauthorized stoppages and fines for participants in them.

6. Cf. for example, M. O. Locks, "The Influence of Pattern-bargaining on Manufacturing Wages in the Cleveland, Ohio, Labour-Market, 1945-1950", *Rev. of Econ. & Statistics*, Vol. XXXVII, 1955, pp. 70-6.

7. Cf. K. F. Walker: "Understanding the Taft-Hartley Act", *Aust. Quarterly*, Vol. XXI, 1949, pp. 19-26.
S. H. Slichter: "The Taft-Hartley Act", *Q.J. Econ.*, Vol. LXIII, 1949, pp. 1-31.

8. Cf. O. Kahn-Freund: "Intergroup Conflicts and Their Settlement", *Brit. J. Sociol.*, 5, 1954, pp. 193-227.

9. In 1952 the proportion was estimated at 89 per cent. *Monthly Labour Review*, March 1953, pp. 261-6.

Stoppages occur mainly when the agreement expires (it is usually annual) and negotiations for a new agreement break down. Arbitrators are drawn from various professions (mainly law, economics, engineering, and sociology) and are organized in a national association, one aim of which is to encourage standard procedures and practices. Standardization is also fostered by the Bureau of Labour Statistics through its publication of prototype contract provisions.

The two basic approaches adopted by these arbitrators invite the application of Mark Perlman's distinction between "autonomous" and "administrative" arbitration:[10] some arbitrators restrict themselves carefully to interpretation of the contract, while others give decisions which amount to administrative rulings. Through their efforts a substantial body of "case-law" is developing outside the legal system proper.[11]

Also active in industrial relations are the conciliation services maintained by the federal government and a number of state governments. These services provide skilled mediators at the request of the parties, but rarely take the initiative in a dispute.

In this setting the parties determine the terms of their agreements with practically no restraint; the community's interest in industrial relations is in effect limited to the process by which the contracts are made, and does not extend into the resultants of the process (the prohibition of the closed shop is the most important exception). The system provides practically no effective check to the parties to industrial relations solving their problems at the expense of the public. Efforts to use the anti-trust legislation for this purpose have failed.

The size and nature of the bargaining unit vary a good deal, according to the geographical distribution and competitive structure of the industry. Industry-wide bargaining is not common,[12] but is growing. (The framers of the Taft-Hartley Act proposed to include in it a ban on industry-wide bargaining, but this was omitted.)

American industrial relations are only finally emerging from industrial warfare, with all its crudeness and physical violence. However, the climate of human relations in American industry appears to be losing its bitterness and in many industries to be constructive, cooperative, and very productivity-minded. During the Second World War, labour-management committees were extensively developed, although their effectiveness was limited and their life brief.[13]

Industrial relations in the *United Kingdom* fall midway between the relative freedom of the market existing in America and the relatively complete public intervention in Australia. Three marked differ-

10. M. Perlman: *Judges in Industry*, Melbourne University Press, 1954.
11. Cf. Kennedy: *Effective Labour Arbitration*, University of Pennsylvania Press, 1948.
12. In a survey of 61 industries in 1951, the Bureau of Labour Statistics found only 27 in which 20 per cent of more of the workers were covered by agreements with groups of employers. Cited by L. G. Reynolds: *Labour Economics and Labour Relations* (N.Y., Prentice-Hall, 2nd Ed., 1954), p. 191.
13. Cf. D. de Schweinitz: *Labour-Management Committees in the U.S. and Canada* (Harvard University Press, 1950).

ences from the American system are evident. First, although there is much reliance upon negotiation between unions and employers, the state regulates unorganized sections of industry where wages would otherwise be markedly out of line. Second, bargaining procedures are more institutionalized in permanent negotiating machinery, often established and conducted with help of government officials. Third, the typical bargaining unit is wider than in America, industry-wide bargaining being the rule, with a measure of economy-wide negotiation.

Unionization has proceeded further than in America and is of course much older; in 1949, 54 per cent of male employes and 23 per cent of female employees were covered by collective agreements. The operation of the wages councils places a definite curb on the tendency for wages in the unorganized trades to lag behind those of the organized industries. The negotiating machinery varies widely, particularly in the industries with a long history of collective bargaining; in the industries where collective bargaining has developed more recently, the machinery approximates more closely the model Joint Industrial Councils propounded by the Ministry of Labour. The National Joint Advisory Council established in 1939 and the various *ad hoc* joint committees appointed in connection with it have achieved a good deal of success in developing a joint approach to industrial relations problems.

Union security has been guaranteed in Britain since early in this century, and except during the years of war and post-war stress there has been no effective curb on the right to strike in industrial disputes (''political'' strikes were illegal between 1926 and 1946, and strikers in certain essential industries may still be punished individually for breach of contract if they leave their employment without proper notice). There is very little legal regulation of the internal management of union affairs.

The collective agreements made in this complex machinery of negotiation have no effective legal force (in this respect there is more voluntarism in the British system than in the American). Voluntary arbitration has always played a part in British industry, and the government provides arbitration facilities through the Ministry of Labour and the Industrial Court for industries wishing to make use of them. The Minister for Labour may also appoint courts of inquiry, the recommendations of which, like those of the Industrial Disputes Tribunal, are not binding on the parties. Voluntary arbitration in Britain is applied more often to the terms of agreements than in America, where it rarely extends beyond interpretation of the agreements. There is some evidence of increasing reliance by the parties on state facilities for conciliation and arbitration,[14] but no strong movement for abandonment of the voluntary principle.

A striking feature of British industrial relations is the extent of formal joint consultation on production matters, which has been carried further and established more firmly than in most other countries.

14. Cf. I. G. Sharp: *Industrial Conciliation and Arbitration in Great Britain* (London, Allen & Unwin, 1950), p. 366.

American and British experience throws some light on Australian efforts to regulate industrial relations. American experience suggests that had Australia not adopted compulsory arbitration as the method of giving effect to the public interest in industrial relations, it would have found it necessary to establish a legal framework at least guaranteeing the right of collective bargaining and preventing the individual employer and worker from the worst abuses of collective industrial power. British experience suggests that in appropriate circumstances collective bargaining can become formalized in permanent private and public institutions of negotiation and voluntary arbitration, with a good deal of joint consultation and labour-management co-operation. The experience of both countries indicates that the growth of collective bargaining brings with it a great deal of voluntary arbitration, which helps develop an extensive body of "private" industrial case-law. Both countries have adopted compulsory arbitration in the emergency of war. Both countries have found that collective bargaining has decreased industrial and occupational wage-differentials, and that certain industries or establishments tend to set the pattern for the rest. American experience indicates that as collective bargaining spreads, the bargaining unit tends to grow wider. In both countries, certain industries have been much more turbulent than others.

It is evident from these facts that many aspects of Australian industrial relations must be attributed to the nature of collective bargaining as a social institution rather than to the element of compulsion itself.

3. *Arbitration in Perspective*

This conclusion is supported by an analysis of the operation of the arbitration system. First, there is the fact that government tribunals play a relatively small role in the settlement of stoppages of work. Between 1913 and 1951, 53 per cent of stoppages were settled by private negotiation and only 10 per cent by government tribunals. Although these figures do not show how many disputes were settled by the tribunals before a stoppage occurred, they support the view that compulsory arbitration is by no means the dominant factor in maintaining industrial peace in Australia.

Detailed studies of relations in particular industries indicate that the effects of compulsory arbitration on industrial peace differ widely according to the patterns of socio-economic forces operating in different industries.[15] In some industries compulsory arbitration has provided an essential foundation for peace; in others it has been a disruptive force, and in others it has had little effect in either direction. Compulsory arbitration does not work in a vacuum, and cannot be expected to have the same results in every industrial environment.

What effect has the system had upon wages, compared with free collective bargaining? It seems more profitable to consider the effects

15. Cf. M. Perlman, *op. cit.*, and K. F. Walker: *Industrial Relations in Australia* (Harvard University Press, 1956).

upon money wages rather than real wages, since real wages depend on the factors determining prices, employment and productivity in the economy as a whole. (In fact in all three countries considered here real wages have moved closely with productivity.) Similar considerations apply to labour's relative share in the national income, which has remained practically constant in the three countries in the long run.

In view of the tendency of arbitrators to make awards somewhere between the claims of the parties, compulsory arbitration might be expected to increase wage-rigidity by damping fluctuations in money wages that would result from the full use of bargaining power. Automatic cost-of-living adjustments, however, operated in the reverse direction.

It seems likely that compulsory arbitration accelerated the tendency of collective bargaining to widen the bargaining unit. Industry-wide bargaining was already strong, but the system made it very easy for the unions to extend it. The system made it easier for unions to spread an advance rapidly through the economy once the advance occurs, but it encouraged employers to organize more effectively to prevent any advance being made. It also facilitated widespread wage-reductions in the early 1930's. On balance, compulsion has probably not greatly affected the total range and speed of wage-movements, although it may have made the major movements rather more jerky. In so far as compulsion produced more synchronous adjustment of rates, it would have intensified the wage-distortion unemployment that might have resulted from the tendency of collective bargaining to reduce wage-differentials between industries.

Compulsory arbitration has exerted some restraint on the tendency for wage-differentials between occupations to narrow under the pressures of collective bargaining and changing industrial organization.[16]

The practice that has developed in the Australian system whereby the federal court provides a forum for the public debate of a national wages policy is presumably not an essential feature of compulsory arbitration, but practically inevitable in a system of such legalistic orientation. Opinions will vary on whether such a practice is likely to increase the system's accuracy in fixing the "right" wage. Also to be considered is the speed of the procedure and its efficacy in getting the policy put into practice, a point which is taken up below.

The effects of the system on *human relations* in industry should also be mentioned. These consist first, of effects on the content of awards and agreements and, second, of effects on the spirit in which

16. Cf. D. W. Oxnam: "Some Economic and Social Consequences of the Australian System of Wage Regulation", Chapter III in *What Shall We Do with the Australian Wage System?* (Proceedings of Aust. Institute of Political Science, Winter, 1952).

K. J. Knowles and D. J. Robertson: "Differences Between the Wages of Skilled and Unskilled Workers, 1880-1950", *Bulletin Oxford Institute of Statistics*, Vol. XIII, 1951, p. 111.

these are administered by both parties. It seems likely that the legalistic spirit of Australian tribunals led to more rapid extension of the basic safeguards against abuse of managerial power. Standard provisions strictly defining conditions of employment of casual workers are an example. Against this, however, the tribunals at an early stage decided they would invade the traditional autonomy of management as little as possible, and this decision has made it harder for unions desiring to do this to make progress against managerial resistance. Opinions will vary on the desirability of this limitation, but it has undoubtedly contributed to Australia's almost complete failure to develop joint consultation in industry, a failure that contrasts sharply with British experience, particularly in times of emergency.

Possibly more significant in the long run has been the influence on the spirit of the day-by-day conduct of industrial relations. Establishment of compulsory arbitration at a time when specialization of managerial function had hardly begun in Australia developed an unfortunately negative conception of the personnel function, which was restricted to seeing that workers did not get any better treatment than they were entitled to by the award. Constructive personnel management, to say nothing of joint consultation, could not grow easily in such an environment. The fact that both these developed in some industries shows that they are not incompatible with the Australian system, but the historical circumstances were unfavourable.

The Australian system appears to have the advantage over the British and American systems in its provision for controlling the tendency of industry-wide bargaining to ignore the consumer's interests and show little social responsibility. However, although the tribunals have done a great deal to prevent abuses in the internal administration of unions, they have not succeeded in protecting consumers' interests to the extent needed, and the fact that they are explicitly charged with this responsibility discourages the parties from accepting any responsibility for the public interest themselves. Similar factors explain why the Australian system, which provides more explicitly for public debate and determination of a national wages policy, has less success than the British system in getting the policy adopted.

The strong ethical element in the Australian wage system helps to discourage a socially responsible approach to wage policy by Australian unions; presumably this is not an essential feature of compulsory arbitration (it did not arise out of any industrial dispute, nor was it proposed by unions or employers) but efforts to rid the system of its ethical garb will not be readily accepted by the unions.

In so far as the parties in industrial relations refuse to modify their position during negotiation, to deny all responsibility for reaching agreement and to disregard the public interest, they set an example which other groups in the community are not slow to follow. Organized pressure by sectional interests is thereby encouraged, and the foundations of a syndicalist society laid.

4. *Prospects for the New Legislation*

Against this background, it would be unrealistic to expect the new legislation to produce marked changes in Australian industrial relations in the immediate future. Possibly more significant in the long run than the actual changes made in the system is the extent to which they represent a change of outlook among the parties and the government. It is practically impossible to assess the extent of such change, as attitudes are liable to be much influenced by political considerations, and it must not be forgotten that controversy has surrounded compulsory arbitration from the beginning. Nevertheless, sentiment in favour of a move in the direction of more free collective bargaining does seem to have accumulated recently on all sides. To this extent, the new revision seems to express a definite shift of opinion, the full strength of which may not be apparent for some years.

Labour's objections to the legislation, both within and without Parliament, focused mainly on features of the system that were left undisturbed in the amendments. These were the penalties that may be imposed on unions (as well as employers) by treating breach of awards and orders as contempt of court, and the right of appeal from the decisions of commissioners. Labour also objected to the abolition of cost-of-living adjustments and claimed that the Arbitration Court had upheld more of the employers' appeals than of the unions' appeals, but these and similar objections to the decisions made under the system are essentially of a different order from objections to the form of the system as such.

It would be futile to expect agreement from the unions on the penal clauses, as they have always wanted to use compulsory arbitration as a means of bringing employers into line, while reserving the right to use direct action if necessary to break through the prevailing level of wages and conditions. The same policy underlies their objection to appeals, for they want to be able to "break the line" in some industry where they are strong and extend their gains throughout the economy by pressing the argument of "wage-justice".

The right of appeal is a key point in the industrial disputes machinery because without it, it is practically impossible to ensure that "the public interest" is consistently considered in the making of awards and agreements. The unions argue that effective conciliation is only possible if the parties are free to make any agreement they like (except for the basic wage and long-service leave). A good deal of evidence could be given for this view, but its logical conclusion leads to the abandonment of any attempt to see that the terms of employment contracts do not damage the public interest, or to develop any consistent wage policy. (The union view is, however, quite consistent with a code of "fair labour practice" governing collective bargaining and the organization and operation of industrial associations.) If the public interest is to be protected, either in the narrower sense of economic prosperity or in some wider sense which might include the interests of the consumer, some way has to be found to prevent the

agreement or award made in one industry from constituting a precedent for others. There is, of course, nothing to stop the parties in any industry making a private agreement, but even where free bargaining exists, as noted above, "key bargains" tend to be diffused fairly widely through the economy.

How to promote effective conciliation and protect the public interest is a fundamental dilemma for the social control of industrial relations. In the past Australia has emphasized the public interest at the price of conciliation, and the 1947 legislation was a swing in the other direction. The 1956 revision does not resolve the dilemma, but it seems to be a more thorough-going compromise than has previously been achieved at the federal level. The separation of the enforcement function from those of conciliation and arbitration, while preserving the specialist character of the enforcing court, should prove to be a useful step towards voluntarism. The arrangements for the discharge of the conciliatory and arbitral functions appear more flexible than those in existence before 1947 and since.

In summary, it may be concluded that the new legislation, when seen in perspective, does not effect a revolutionary change in the arbitration system, and could not be expected to transform Australian industrial relations if it did. Nevertheless the changes made in the system appear to be in a direction that will help the Australian community deal more effectively with what was described in 1892 as "one of the most delicate operations ever attempted to be dealt with by legislation".[17]

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17. *N.S.W. Parliamentary Debates* (1892), p. 6541.

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SPATIAL COMPETITION AND SHELTERED INDUSTRIES

1. *Introduction*

Through the long history of "applied" economics much attention has been given to the economics of protection. Techniques have been invented both to show how systems of import duties, quotas, or subsidies may be used to modify the harshness of competition in the interests of home industries, and to measure the effectiveness of such systems and their effects upon price. These techniques have sometimes been applied to freight charges, suggesting that transport cost may itself be regarded as a form of "protection". But while similarities between the effects of transport costs and, say, an import duty have been noted, differences between the two have been largely neglected. For at least three reasons it would seem sensible to treat transport cost as a separate phenomenon; first, because it is economic in origin and not the tool of deliberate policy; second, because it acts with equal strength upon imports and exports alike (though in the case of a protective duty also it is unwise to neglect the possibility of reciprocal action by other countries); third, because it is at least as significant in internal trade where no form of protection policy is possible as for international trade.

The third reason may well be illustrated with reference to Australia and trade between the States. Since the days of David Syme, protection of industries has been a live issue in Australia; but while many industries have used the machinery set up to give them protection from foreign competition, and external "balance of payments" has frequently been used to justify this, the Constitution itself makes political "protection" of one state's industries from the competition of those industries in other states impossible. This has, strangely enough, sometimes had the effect, not of unifying the Australian economy, but of producing a new differential between states. A state such as Western Australia has been in the position of having a home market too small to stimulate the establishment of certain native industries, particularly since transport costs over large distances made export of such products to other states out of the question. Her people have therefore in the past had to buy from industries in the eastern states, at prices inflated by freight charges; and even at times when, though Australia's foreign balance of payments has been adverse and Western Australia's foreign balance favourable, an unfavourable balance with the eastern states has more than offset this apparent advantage.

The present period of Western Australia's history is significant particularly for the way in which a rapid increase in her population by migration has suddenly made possible the growth of a number of industries that are now just able to produce economically for a home market; even where production costs for a relatively small output are still higher than those of eastern state industries, transport costs are

in many cases sufficient to make up for this. Accordingly, we find the emergence in the west of new industries, not "protected" in the conventional sense, but "sheltered" by transport costs. Sheltering becomes a phenomenon that must be studied for an understanding of the new industrialization of the west. Between 1949 and 1953 the local output of cigarettes increased by 186 per cent; that of roofing tiles and enamels by 150 per cent and that of tyre retreads more than doubled. Other manufactured products whose outputs increased by more than two-thirds include sporting goods, breakfast foods, plaster sheets and paints. Other products showing marked development were cement, timber products, pickles and beer. Practically all these things are for consumption in the home market, and the population increase since the war from 470,000 to 674,000 (June 1956) is an obvious explanation of this new development. Before the war, 14 per cent of the workers in Victoria were in "protected" industries and only 2·8 per cent of the workers in Western Australia. Since the growth of industry in the west has been, as indicated, mainly in unprotected fields, the difference between these two figures must now be much greater. If "protection" has been important in the growth of Australian manufacture generally, manufacturing development in the west must be explained in other ways. It is suggested that the explanation will be tied up with this characteristic of a small but rapidly growing home market sheltered by the cost of transport from the east.

If this is so, any study of the new industrialization of Western Australia will need as one of its foundations a theory of the economics of "sheltered industries". Unfortunately, there is little in economic theory yet to supply this theory. There is not even a clear definition that can enable us to say when an industry is sheltered or when it is one that could have been established earlier if only someone had thought of it. The purpose of this present study is to get a clearer picture of the sheltering effects of transport costs and to devise a technique by which those effects may be measured. It will then be suggested that such a technique may have importance, not only for the understanding of what is happening to an economy like the West Australian one today, but also in other fields of economic analysis where transport costs play a significant part.

2. *Transport Costs and Trade Movement*

Consider first a situation in which two rival industries exist, each within its own market and faced with transport cost of "t" per unit when selling in the rival's market. Market A receives u_{aa} from its own firm and u_{ab} from firm B; while market B is similarly supplied with u_{bb} from firm B and u_{ba} from the rival producer. Let p_a and p_b represent the respective equilibrium prices in the markets A and B respectively.

Since we shall be concerned only with small movements about the equilibrium position it will be permissible to assume that the total cost and the demand functions are linear. Suppose that A works with over-

head costs of o_a and variable costs of c_a per unit, B's overhead and unit prime costs being similarly o_b and c_b. Take the demand equations in the two markets to be

$$p_a = v_a - g_a(u_{aa} + u_{ab}) \text{ and } p_b = v_b - g_b(u_{ba} + u_{bb}).$$

Then if P_a and P_b stand for the respective profits made by the firms in unit time, we have the two equations—

$$P_a = u_{aa}\,p_a + u_{ba}\,p_b - o_a - c_a(u_{aa} + u_{ba}) - tu_{ba};$$
$$P_b = u_{ab}\,p_a + u_{bb}\,p_b - o_b - c_b(u_{ab} + u_{bb}) - tu_{ab}$$

Now each firm must regard the output of its rival to either market as beyond its control, and move towards its own maximizing position only by varying its own supplies to the two markets. For equilibrium therefore we have the four equations—

$$\frac{\partial P_a}{\partial u_{aa}} = \frac{\partial P_a}{\partial u_{ba}} = \frac{\partial P_b}{\partial u_{ab}} = \frac{\partial P_b}{\partial u_{bb}} = 0.$$

The solutions of these four equations can easily be shown to be—

$$3g_a\,u_{aa} = v_a - 2c_a + c_b + t;\ 3g_b\,u_{ba} = v_b - 2c_a + c_b - 2t;$$
$$3g_a\,u_{ab} = v_a + c_a - 2c_b - 2t;\text{ and } 3g_b\,u_{bb} = v_b + c_a - 2c_b + t.$$

Further, by substituting these values in the demand equations, we find that the prices in the two markets are given by—

$$3p_a = v_a + c_a + c_b + t \text{ and } 3p_b = v_b + c_a + c_b + t.$$

Such a solution, however, is formal only. To fit reality it will be necessary to add that no quantity flow (u_{aa}, u_{ab}, etc.) can ever be negative. Thus, for example, even if $2c_a + 2t > v_b + c_b$, u_{ba} cannot be less than zero. In any specific case it will be necessary to check and perhaps modify the solutions by applying the following conditions:

if $2c_a$ is not less than $v_a + c_b + t$, u_{aa} is zero,
if $2c_a$ is not less than $v_b + c_b - 2t$, u_{ba} is zero,
if $2c_b$ is not less than $v_a + c_a - 2t$, u_{ab} is zero, and
if $2c_b$ is not less than $v_b + c_a + t$, u_{bb} is zero.

For example, if $2c_a$ exceeds $v_b + c_b - 2t$, u_{ba} will be zero, and $2g_b u_{bb}$ will become $v_b - c_b$, the other two quantity flows remaining as before.

It may happen that more than one such modification will apply. Thus if $v_a + v_b + 2t$ exceeds $c_a + c_b$ which in turn is equal to or greater than $v_a + v_b - 2t$, it will be seen that u_{ba} and u_{ab} both become zero while u_{aa} and u_{bb} become $(v_a - c_a)/2g_a$ and $(v_b - c_b)/2g_b$ respectively. In other words, transport costs have completely eliminated inter-regional trade, and each firm acts as a monopolist in its own market, at prices $\frac{1}{2}(v_a + c_a)$ and $\frac{1}{2}(v_b + c_b)$ respectively.

When more than two markets are involved the solution becomes complicated by an assortment of different freight costs between different markets. We must consider such terms as t_{xy} as unit freight charge from market X to market Y (we may assume that t_{xy} is the same as t_{yx}). Consider the case of three markets, A, B and C, with prices p_a, p_b and p_c related as before to linear demand equations and

with all other quantities similarly defined. Let the appropriate cost and demand equations for the additional market C be—

$$\text{cost} = o_c - c_c(u_{ac} - u_{bc} - u_{cc}) \text{ and}$$
$$p_c = v_c - g_c(u_{ca} - u_{cb} - u_{cc}).$$

The solution of the equations for profit maximization is carried out as before, giving the following results:

$$4g_a u_{aa} = v_a - 3c_a + c_b + c_c + t_{ab} + t_{ac}; \quad 4g_b u_{ba} = v_b - 3c_a + c_b + c_c - 3t_{ab} + t_{bc};$$
$$4g_c u_{ca} = v_c - 3c_a + c_b + c_c - 3t_{ac} + t_{bc}; \quad 4g_a u_{ab} = v_a + c_a - 3c_b + c_c - 3t_{ab} + t_{ac};$$
$$4g_b u_{bb} = v_b + c_a - 3c_b + c_c + t_{ab} + t_{bc}; \quad 4g_c u_{cb} = v_c + c_a - 3c_b + c_c - 3t_{bc} + t_{ac};$$
$$4g_a u_{ac} = v_a + c_a + c_b - 3c_c - 3t_{ac} + t_{ab}; \quad 4g_b u_{bc} = v_b + c_a + c_b - 3c_c - 3t_{bc} + t_{ab};$$
$$\text{and } 4g_c u_{cc} = v_c + c_a + c_b - 3c_c + t_{ac} + t_{bc}.$$

We may similarly see that the prices will be given by—

$$4p_a = v_a + c_a + c_b + c_c + t_{ab} + t_{ac}; \quad 4p_b = v_b + c_a + c_b + c_c + t_{ab} + t_{bc};$$
$$\text{and } 4p_c = v_c + c_a + c_b + c_c + t_{ac} + t_{bc}.$$

Similar tests will need to be applied to these answers to ensure that negative values are not ascribed to any of the quantity flows.

We may now proceed to generalize for the case of a large number of markets A, B, C, ... N. For the general solution two class equations will be required; one must show the quantity u_{ij} flowing from any producer J to any market I (including the case where I is J), and one must give the price p_i that will rule in any market I. These two equations will now be obtained.

The profit that any producer J will make on outputs supplied to any market I will be given by the equation

$$P_{ij} = u_{ij}p_i - {}^{*}o_j - u_{ij}(c_j + t_{ij}).$$

This will be maximized when

$$\frac{\partial P_{ij}}{\partial u_{ij}} = 0; \text{ i.e. when } v_i - g_i \sum_{k=a}^{n}(u_{ik}) - g_i u_{ij} - c_j - t_{ij} = 0.$$

or when

$$g_i u_{ij} + g_i \sum_{k=a}^{n} u_{ik} = v_i - c_j - t_{ij} \quad \ldots\ldots\ldots\

The second, giving the price in market I, may be obtained by substituting this result in the original demand equation. We get, with very little difficulty, the answer

$$(n+1)p_i = v_i + \sum_{k=a}^{n}(c_k + t_{ik})$$

and the general model is now completely solved, except that, as before, a correction is needed if the formal value for any u_{ij} is found to be negative, which will happen if

$$(n+1)(c_j + t_{ij}) \text{ is greater than } v_i + \sum_{k=a}^{n}(c_k + t_{ik})$$

3. *The Character of a Sheltered Industry*

This general model may now be used to examine the conditions needed if an industry is to grow up behind the shelter of the cost of transport between its own market and others. Transport costs affect a producer in two opposing ways; they lower his own export possibilities to other markets, but they afford protection in his home market from outside competition. The problem is one of balancing gains and losses. It becomes necessary to define just what we mean by a "sheltered" industry. In the narrowest sense, an industry is sheltered when transport costs remove all competition in the home market from outside; although the conditions for this are not difficult to determine, it is a very restricted use of the term, and not a particularly useful one except in a few isolated cases. In a very broad sense, a market is sheltered whenever gains from restricted outside competition exceed losses in exports. In this study we are particularly interested in problems of birth and growth of industries in a distant state such as Western Australia, where a rapidly growing population is producing a home market of a size just large enough to call such new industries into being; for such problems a third meaning can be given to the term; we may call an industry sheltered if it could not have existed even to supply its own home market but for the transport costs that inflate the prices of products previously imported. While a word may be said about the first two uses of the word "sheltered", it will be the third use that concerns us mainly.

If sheltering means the elimination of all imports to market I, we must look for conditions that make u_{ij} zero for every producer J but not for producer I. They will be found in the $(n-1)$ relations—

$$(n+1)(c_j + t_{ij}) \text{ is not less than } v_i + \sum_{k=a}^{n}(c_k + t_{ik})$$

$$(j = a, b, c \ldots . n, \text{ excluding } j = i.)$$

By adding together these $(n-1)$ relations we get

$$2\left[\sum_{k=a}^{n}(c_k + t_{ik})\right] \text{ is not less than } (n+1)c_i + (n-1)v_i;$$

and this would be the test for a sheltered industry if the narrowest definition were applied.

Secondly, if an industry I is considered sheltered in the very broad sense that as a result of transport costs the increased sales on

the home market more than outweigh the lowering of exports to other markets, we require to find under what conditions $\sum_{j=a}^{n} u_{ji}$ will be greater in the presence of transport costs t_{ia}, t_{ib}, etc., than in their absence. These conditions will be expressed in the relation, obtained somewhat laboriously from the first general equation, that

$$\sum_{j=a}^{n} \sum_{k=a}^{n} t_{jk} \text{ is greater than } (n+1)\sum_{k=a}^{n} t_{ik}.$$

The application of this test to a many-market situation will clearly be very complicated; it is fortunate that the definition of "sheltered" that involves it is not the one most suitable for this study.

For our purpose, then, we select the definition that calls industry I a sheltered one if u_{ii} is positive but would have been zero in the absence of transport costs. To put this in another way, there must be some value V, less than unity but not less than zero, such that if all transport costs were proportionally reduced by multiplying them by V, u_{ii} would become exactly zero.

Now from the general model (since t_{ii} is by definition zero), we may rewrite the equation for u_{ii} in the form

$$\frac{n+1}{n} g_i u_{ii} = \frac{\sum_{k=a}^{n} t_{ik}}{n} - \left[\left(c_i - \frac{\sum_{k=a}^{n} c_k}{n} \right) - \frac{v_i - c_i}{n} \right]$$

and since u_{ii} becomes zero when $\sum_{k=a}^{n} t_{ik}$ becomes $V \cdot \sum_{k=a}^{n} t_{ik}$, we have

$$V \cdot \frac{\sum_{k=a}^{n} t_{ik}}{n} = c_i - \frac{\sum_{k=a}^{n} c_k}{n} - \frac{v_i - c_i}{n}$$

From this we get (since V is given as less than 1 but not less than 0) the following requirement for "shelter":

$$1 > \frac{\left(c_i - \frac{\sum_{k=a}^{n} c_k}{n} \right) - \frac{v_i - c_i}{n}}{\frac{\sum_{k=a}^{n} t_{ik}}{n}} \geq 0$$

This relationship is seen on inspection to be far less cumbersome than it appears, for the denominator is simply the average of all unit transport costs to market I, the first term in the numerator is the excess of producer I's unit prime cost over the average for all producers, and v_i is the price that would extinguish demand in market I if the present rate of reduction of demand with price increase were maintained continuously. Thus any potential producer on the home market would apply the test in the following way:

(i) divide the excess of the extinguishing price over his anticipated unit prime costs by the number of producers supplying the market from outside;

(ii) deduct the result from the amount by which his own unit prime cost exceeded the average unit prime cost of all producers (including himself);

(iii) divide the answer by the average unit transport cost from all producers to his home market;

(iv) if the result of this is negative, he would know that he could profitably produce for the home market even in the absence of transport costs, but

(v) if the result, while positive, is less than unity, the existing level of freight charges will be sufficient to provide him with shelter in the home market.

Once established on the home market, the general model could then be investigated to show whether it would pay him to produce for outside markets as well; the only new information he would need to make such an estimate would be the ruling price in such an outside market, the rate at which demand there fell with rising prices, and the average of all producers' transport costs to that market.

4. *Other Applications of the Technique*

The development of the theory of sheltered markets might conceivably cast light upon a number of other economic problems where transport costs are involved. Two such problems may be suggested here.

The first is the problem of price leadership with oligopoly. In a country such as Australia, where large markets tend to develop in capital cities only, with vast distances between them, it is not uncommon to find a single major producer of a given commodity operating as a price leader (with a number of small producers in competition accepting the price set by him), but at the same time exporting small quantities to each other capital. This is in fact a close description of the trade in biscuits in Australia, and other examples might be found and investigated. In such situations it appears that these large producers act as price leaders in their home markets but accept a place among the small competitors in the markets of other states. No analysis of such a market situation has apparently yet been made, and it might be useful research to see if the above technique would be found to describe such an actual set-up.

A further application of the theory could be made to the study of free international trade. The trade between major importing and exporting countries could be divided into a dozen or so main sectors. For each country an index number for average prime cost in each sector could be calculated, and another index of unit transport cost to each other country in each sector could similarly be constructed. If the price indexes for the sectors in each country were known, together with an estimate of the rate at which sales varied with prices, an econometric model of international trade could be constructed.

This model might then be used for a number of different problems. It should be possible to use it to estimate the quantitative effects upon any country of such things as variations in exchange rates, growth of national efficiency, changes in national demands and so on. The model would be comprehensive enough to help towards a clearer understanding of the trade conditions for any country at any time, and with refinement of the data, it might lead to a simple way of obtaining valuable policy recommendations wherever changed conditions produced drastic effects upon a particular country's balance of trade.

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E. G. WAKEFIELD AND THE ALIENATION OF CROWN LAND IN N.S.W. TO 1847

I

In essence, Wakefield's view of colonization was that it was necessary to create and maintain a colonial proletariat. "The object of the restriction on land, of a price being put upon land, is to prevent the labourer from becoming a freeholder too soon".[1] It was in conformity with this view that the Ripon regulations of 1831 replaced the old system of land grants in New South Wales by land sales at public auction. The minimum upset (reserve) price for Crown land was raised from 5/- per acre to 12/- in 1839, and there is reason to suppose that this was due primarily to the influence on the Colonial Office of the South Australian Company, which feared the greater attractiveness to capital of the older colony with its cheaper land.[2] But the increase in the minimum price was in full accord with Wakefield's principles, as was the further increase to £1 per acre in 1843.[3]

As Wakefield was concerned to make the colonies attractive to men of his own kind—men of independent fortune—it might be supposed that well-to-do colonists in New South Wales would welcome these changes. Indeed, the big landowners were essentially in agreement with the principles advanced by Wakefield. Like him, they generally stressed the importance of labour as against "those political economists who worship capital".[4] Big landowners and squatters were no more anxious than Wakefield to see their employees become independent landholders "too soon". While many graziers adopted a high moral tone in discussing their workers' improvident habits, J. Malcolm, a landowner and squatter, said frankly: "The best man for the squatter was he who went into the town, and spent his money as fast as he earned it, for he had then to come back again either to his former master, or to someone else."[5]

Nevertheless, it is a fact that the leading settlers opposed the increases in the minimum price of Crown land. Their reasons for opposition constitute an instructive commentary upon Wakefield's system of colonization. Summed up, it seems that Wakefield was mistaken in his basic assumption about New South Wales: in practice, few men of the labouring class obtained land there, even in the years before 1831. Consequently, the question of a higher price for land had to be judged by criteria other than the main one used by Wakefield.

1. *Parl. Papers*, Committee on Disposal of Lands in British Colonies, 1836, evidence of E. G. Wakefield, Qq. 944, 875, 954.
2. *Ibid.*, evidence of R. Torrens, Qq. 1105, 1122; Return of Correspondence relating to the Minimum Price of Land (1836-42), *N.S.W. V. & P.*, 1844, 1, pp. 611-30.
3. Wakefield had "no hesitation" in proposing a price of £2 per acre for all the Australian colonies (*Parl. Papers*, Committee on South Australia, 1841, evidence of Wakefield, Q. 2910).
4. E. G. Wakefield, *England and America*, II (London, 1833), p. 96.
5. *N.S.W. V. & P.*, 1845, Committee on Immigration, evidence of Malcolm, Q. 80.

II

Wakefield's theoretical starting point was that "where land is very cheap and all men are free, where every one who so pleases can easily obtain a piece of land for himself, not only is labour very dear . . . but the difficulty is to obtain combined labour at any price".[6] This was sound enough, but when Wakefield applied it to New South Wales the fact that his knowledge was derived from extensive reading, not practical experience, was apparent. He did indeed acknowledge that a large part of the labour force in the colony was temporarily not free, but his reading of the situation there led him to assume that free labourers, including emancipated convicts, were acquiring land easily and could stock a small farm out of savings in less than two years.[7] This assumption, originally based upon a belief that land grants were issued more or less indiscriminately, was fortified by the recurring fact of labour shortage in the colony. To Wakefield, this seemed clear evidence that the labour market was being drained of workers. He did not examine the possibility that the labour shortage was due simply to the more rapid expansion of the wool-market, of production, and of capital, than of the labour supply, in the 1830's.

The assumption behind Wakefield's theory was for long accepted without question in London. Thus, the House of Commons Committee on Transportation in 1838 concluded in its report that a worker could "pass in too short a time from the condition of labourer to that of landowner"; but this conclusion was based only upon the existence of labour shortage and the fact that a considerable quantity of land had been sold—none of the evidence presented to the committee bore upon the question of whether labourers had actually acquired land.

Occasionally statements were made in New South Wales which supported Wakefield's assumption, but these were infrequent, general in formulation, and usually expressed in a special context. For example, the Legislative Council, after considering the report of its immigration committee in 1840, declared that "able-bodied, sober, industrious, and careful emigrants may, within a few years after their arrival, rise from the condition of labourers to be themselves employers of labour"; but the declaration was clearly designed to counteract the effect of unfavourable reports about the colony which were said to be circulating amongst prospective labouring emigrants in England.[8]

Far more significant than such special pleading was a report to Stanley from the Colonial Land and Emigration Commissioners on 17 July 1841:

> "It appears to us, that as to the possible effect of a low price, in withdrawing persons from laboring for hire in the Colony, there

6. E. G. Wakefield, *England and America*, I, p. 247.
7. E. G. Wakefield, *A Letter from Sydney* (Everyman edition, 1929), p. 12.
8. *N.S.W. V. & P.*, 1840, proceedings of 23 October. G. Miller, accountant of the Savings Bank of N.S.W., said that many of the Bank's depositors had been able to become masters and employers through saving. However, it is not clear how many of these thrifty depositors were labourers: "our most numerous class [of depositors] are Sydney Mechanics" (*ibid.*, Committee on Immigration, evidence of Miller, Qq. 6, 9).

may be some misapprehension as to the state of facts. In North America, where lots were of small size, and their value was to be realized by force of human labour only, it is not questioned that too great a facility of acquiring land withdrew large numbers from the class of labourers; but in the Australian colonies, where land requires to be in large quantities for the principal use to which it is turned, and where also the profit to be derived from it depends not upon mere human toil, but upon the acquisition and rearing of stock, requiring a considerable further outlay of capital, it may well be doubted whether the same effect is to be apprehended. We certainly do not remember to have seen it mentioned in any official accounts from these colonies, that land has been acquired by persons in the condition, and with the means of labourers; and Sir George Gipps . . . mentions, that it is 'rarely advantageous, in any part of Australia, for a newly arrived Emigrant to become a proprietor of land, unless his capital is considerable'.

". . . The truth perhaps is, that various other causes, besides the price of land, must govern the usual rate of wages. It is, we believe, generally understood that where the Capital which can be profitably used in employing labour is very large, in proportion to the number of labourers that can be obtained, wages will be high; and this will continue equally true, whatever might be the existing land regulations."[9]

This reasoning was taken up and repeated in New South Wales itself.[10] Its validity is best examined by reference to the costs of farming or grazing in the colony.

III

In the first place, there was the cost of acquiring land, which may be gauged from the land regulations.

The early attempt to establish a peasant proprietary by small grants of land failed within the first decade or two, largely as a result of economic vicissitudes and of the officer-farmers' exploitation of state power to secure for themselves control of cheap convict labour, imports, and the internal market in agricultural produce. Many small farmers were ruined and their land was taken over by members of the ruling clique and by some wealthy ex-convicts who used similar methods.[11]

From about 1814, when the imperial government began to encourage the emigration of men of capital, land policy was modified by the practice of varying grants to free immigrants according to the capital possessed by them. Macquarie continued to make small grants to ex-convicts, but it seems doubtful whether many of these grantees retained their land for long before selling out. Bigge referred to the consolidation of small grants by such men as D'Arcy Wentworth.

9. Enclosure, Stanley to Gipps, 18 Oct. 1841, *N.S.W. V. & P.*, 1842, pp. 120-3.
10. e.g. by the Committee on Crown Land Grievances in its Report, *N.S.W. V. & P.*, 1844, 2, p. 123; and see evidence of E. Curr, *ibid.*, p. 355.
11. B. Fitzpatrick, *British Imperialism and Australia, 1783-1833* (London, 1939), *passim*.

"This system is convenient to the large capitalists, and has led to the accumulation of a considerable quantity of land in their hands."[12]

Bigge's reports provided the starting point for a comprehensive reorientation of land policy in the mid-1820's. He recommended that grants be made in proportion to capital available, on a certain scale; that settlers be permitted to buy or to occupy Crown land adjacent to their grants; and that grants of fifty acres should be made to ex-convicts only if they possessed some capital.[13] These proposals were soon adopted, with the result that small grants, whether to ex-convicts or free immigrants, had almost ceased to be made by 1828: in that year, only ten persons received grants of less than 100 acres each, eight received grants of 100-500 acres each, and seventy-eight obtained grants of more than 500 acres each.[14]

At that time, the scale of grants to immigrants in proportion to capital ranged from 640 acres for £500 capital to 2,560 acres for £3,000 capital. As the minimum grant was stipulated as 320 acres except in the immediate vicinity of towns, the minimum capital necessary to obtain a grant was £250.[15] A few years earlier, according to W. C. Wentworth, the minimum was £500.[16] The grant itself cost the settler nothing apart from legal fees, so that his capital was still available to him for productive purposes. Nevertheless, the magnitude of the capital requisite for obtaining a grant suggests that E. S. Hall had reason to complain that the young men of New South Wales, "obtaining no land or land in inadequate quantities, are unable to marry".[17]

Wakefield and his followers pointed to the laxity of administration of land-grant regulations in the 1820's, and to the prevalence of favouritism, corruption, and fraud. There was much truth in these allegations, but it is very doubtful whether many persons of the labouring class were amongst those favoured. For example, Darling made a number of land grants as marriage-portions, without reference to capital possessed, but these were for "the Daughters of Men of Respectability", especially clergymen's daughters.[18] Grants were also made without reference to capital to explorers such as Wentworth, Blax-

12. J. T. Bigge, Report on the State of Agriculture and Trade in New South Wales, 1823, pp. 36, 41. Bigge also found that most of the land held by ex-convicts had not been ordinarily granted to them: it had been bought (*ibid.*, p. 35). Evidently there was much differentiation amongst the ex-convict settlers, between the big (such as Terry) and the small.

13. *Ibid.*, p. 48.

14. Enclosure, Darling to Murray, 1 Mar. 1829, *H.R.A.*, I, xiv, pp. 671-2. The 78 large grantees received an average of 1,791 acres each. Also in 1828, six persons bought a total of 12,672 acres of Crown land. For soldier-settler grants, 1829-31, see *infra*.

15. Bathurst to Darling, 2 April 1827, *H.R.A.*, I, xiii, pp. 222-3; Colonial Office regulations for prospective emigrants, Nov. 1824, Apr. 1827 (printed in Appendix to Report of Committee on Disposal of Lands in British Colonies, 1836).

16. W. C. Wentworth, *British Settlements in Australasia* (London, 1824). II, pp. 99-100, 118. This estimate was based on the published scale then in force, which ranged upwards from 500 acres for £500 capital.

17. Enclosure, Darling to Murray, 2 Jan. 1829, *H.R.A.*, I, xiv, p. 580.

18. Darling to Huskisson, 4 Sep. 1828, *H.R.A.*, I, xiv, pp. 385-6; Darling to Goderich, 14 Sep. 1831, *H.R.A.*, I, xvi, pp. 353-4. Darling made these marriage-portion grants free of quit-rent conditions.

land, and Lawson; and it appears that when grants were made to government officials their annual salary was counted as capital.[19]

No doubt some relatively poor men acquired grants by false swearing as to the amount of capital at their disposal, but this was made difficult by the establishment in 1826 of a Land Board to investigate applications. The Land Board was hostile to the aspirations of emancipists, and it even urged that "no person should be allowed to Purchase Land without the Governor's previous permission".[20]

Of the Crown land which was sold before the Ripon regulations came into effect, by far the greater part was sold by Governor Brisbane in 1824-5, when warrants for the sale of 358,110 acres were issued.[21] Nearly all this land was sold at a price of 5/- per acre, on terms of 10 per cent deposit and the balance by instalments over 2-3 years. Here there might seem to have been an opening for the small man, especially as most purchasers paid their deposit (6d. per acre) and nothing thereafter for a number of years. In fact, however, these land buyers were mainly "the great Landholders": in 1832, 120-130 of them owed the government more than £50,000 on account of their land-purchase transactions.[22]

There were other ways of obtaining the use of Crown land cheaply in the 1820's. Squatting was the most obvious, but new regulations were designed to make it more difficult for the small man. Tickets of occupation were abolished in 1827; instead, settlers might be granted permission to occupy grazing land at an annual rent of £1 per 100 acres. A similar rent was to be charged for large tracts occupied with a view to purchase whilst the purchase regulations were suspended. In actual fact, such rent was neither demanded nor paid, with the result that according to Surveyor-General Mitchell, in 1831, "about 250,000 acres of the best of the vacant land is held . . . without any benefit to the revenue".[23]

Some men with little capital were able to take advantage of the chaotic state of land administration, but the main advantage lay clearly with the bigger settlers, as may be seen from the operation of regulations of 16 October 1828. These regulations provided that grazing land adjoining a settler's own property might be occupied at an annual rent of only 2/6 per 100 acres. Darling described this provision as being "of the greatest importance to the Colony, being calculated to operate as a check upon the Cattle Stealers and prevent the Farms of established Settlers being grazed upon by the Herds of itinerant Individuals, who, having no Land of their own, traverse the Country". In other words, poor squatters were to be squeezed out as far as possible,

19. Darling to Goderich, 16 Sep. 1831, *H.R.A.*, I, xvi, p. 355.
20. Enclosure, Darling to Huskisson, 2 Aug. 1828, *H.R.A.*, I, xiv, p. 302. This was directed against wealthy ex-convicts. Government regulations of 21 Aug. 1828 declared that in future Crown land would be sold at auction instead of by tender, but that no person might bid at auction unless authorized to do so by the governor.
21. Enclosure, Darling to Bathurst, 5 Apr. 1827, *H.R.A.*, I, xiii, p. 237. Sales were suspended in 1826, pending survey and valuation.
22. Bourke to Howick, 28 Feb. 1832, *H.R.A.*, I, xvi, p. 544.
23. Enclosure, Darling to Murray, 28 Mar. 1831, *H.R.A.*, I, xvi, pp. 151, 167.

and it is not surprising that permission was soon granted to twenty-seven persons to occupy 95,710 acres at 2/6 per 100 acres.[24]

In short, access by workers to land in New South Wales was effectively restricted before Wakefield's views became important. Nevertheless, the land-grant system was open to much abuse and the object could be achieved more simply through the price mechanism, by disposing of Crown land by sale only. In the peculiar circumstances of the colony, where land was required mainly in large quantities for pastoral purposes, a low price per acre was as effective in restricting landownership to men of capital as would have been a high price per acre in agricultural colonies.

From 1831, Crown country land was generally sold in sections of 640 acres: "it is not intended to dispose of land in smaller quantities, unless upon special grounds".[25] Indeed, it seems that surveying methods in the 1830's generally made lots larger than 640 acres. M. W. Lewis, an architect and surveyor, told the N.S.W. Committee on the Land and Immigration Debenture Bill in 1841 that a so-called section of 640 acres, "from the rule of measuring the back broken section along with the quantity applied for, must always average half as much again, seldom less, but almost invariably more, so that if a party has funds sufficient to purchase a section, and applies for it, on the day of sale he finds himself totally unable to do so, from the excess of quantity measured".[26]

A section of 640 acres cost at least £160 if bought at the minimum upset price of 5/- per acre; at least £384 at the minimum upset price of 12/-; and at least £640 at the minimum upset price of £1. How much more a section cost in practice depended upon bidding at auction. True, Gipps's regulations of 1 March 1843 provided for the sale of special country lots—lands suited for cultivation—in portions of 20-320 acres; but little was sold in small portions, and in 1846 Gipps established the principle of fixing an upset price greater than £1 per acre for agricultural lots where the area in question was less than 100 acres.[27]

All the evidence indicates that it was largely the old, well-established settlers who bought Crown land in the 1830's. For example, T. Icely owned more than 40,000 acres by 1842, and L. Macalister spent more than £10,000 in buying Crown land.[28] Hannibal Macarthur declared that land was bought chiefly by old settlers in the decade: "they bought with the view of completing, some, ten, some, fifteen or twenty

24. Darling to Murray, 6 July 1829, *H.R.A.*, I, xv, pp. 53, 62-3. For political reasons, E. S. Hall was refused permission to occupy grazing land adjoining his property. See also B. Fitzpatrick, *op. cit.*, pp. 310-12.

25. N.S.W. Government Order, 1 Aug. 1831, printed in *N.S.W. V. & P.*, 1847, 1, p. 636. The "special grounds" were probably intended to apply mainly to military settlers, who were entitled to partial remission of purchase-money.

26. *Parl. Papers.* Colonial Lands and Emigration, 1843, Part II, p. 77.

27. *N.S.W. V. & P.*, 1847, 1, p. 710; *N.S.W. V. & P.*, 1846, 2, p. 250. Building land was always priced above the prevailing minimum upset figure.

28. *N.S.W. V. & P.*, 1842, pp. 377-9 (Icely's evidence); *N.S.W. V. & P.*, 1844, 2, p. 157 (Macalister's evidence).

thousand acres around their original grants".[29] Of course, many smaller men than these also bought Crown land, but often not without difficulty. Peter Macarthur, who was apparently a retired officer entitled to remission of purchase-money, arrived in the colony with an order for 800 acres in 1834, but it was "upwards of three years" before he was able to obtain 690 acres of "rejected lands". Auction, he said, "was always resented and resisted by opposition . . . by the nearest great settler, or squatter, or failing these, by the regular land jobbers".[30]

At that time the upset price was 5/- per acre, and the actual price at auction was not much higher. Small wonder, then, that in 1840, in conditions of speculative boom and high prices, Gipps wrote: "The settler who has only a few hundreds of pounds at command, will, in general, find, on his arrival, that he was wrong in thinking to invest any portion of his capital in Land."[31]

Squatting was an attractive prospect for all classes of colonists because the charge for the use of Crown land in squatting districts was negligible. But besides the economic requirements for squatting, which will be considered presently, there were social and legal barriers to surmount. By the mid-1830's, the leading squatters were alarmed by the presence of a number of poor squatters both within and without the boundaries of location; and it was mainly "to prevent pauper free or freed men from squatting", as John Jamison put it, that a system of licensing of squatters, followed by establishment of a Border Police Force, was adopted.[32] By squatting Acts from 1836 onwards, applicants for squatting licences were required to produce certificates of character signed by a commissioner of Crown lands or other J.P. No doubt this requirement was difficult to administer, but there is some reason to suppose that commissioners of Crown land took their duties seriously in this respect; they were not unsympathetic towards relatively small squatters of their own class, but they had scant sympathy for squatters of inferior social origin. Certainly within the boundaries of location, where supervision was easier, poor squatters were quite effectively dealt with.[33]

Once land had been acquired, considerable capital was necessary to exploit it fully. In the case of grazing, whether on private or squat-

29. *N.S.W. V. & P.*, 1843, Committee on Crown Land Sales Act, evidence of Macarthur, Q. 12. This quotation is rather misleading, as sections were generally selected for their water-frontage, commanding back runs which then need not be bought. Land was also bought to obtain the services of convicts who, from 1835, were assigned to settlers in proportion to the amount of land held or cultivated (*ibid.*, evidence of Jaques and Icely).

30. *N.S.W. V. & P.*, 1844, 2, p. 324. W. Hovell asserted that landowners had to face blackmailers at auctions of land adjacent to their property. "In two instances, I had to give one man £20, and another £42 not to oppose me" (*N.S.W. V. & P.*, 1847, 2, p. 547).

31. Gipps to Russell, 19 Dec. 1840, *N.S.W. V. & P.*, 1842, p. 91.

32. S. H. Roberts, *The Squatting Age in Australia* (Melbourne, 1935), pp. 95-7.

33. K. Buckley, "Gipps and the Graziers of New South Wales, 1841-6". *Historical Studies*, Vol. 6, 24 (May 1955), pp. 405-6. On the attitude of C.C.L.'s F. Fyans and A. Fry, see B. Fitzpatrick, *The British Empire in Australia* (Melbourne, 1941), pp. 73-4, and *N.S.W. V. & P.*, 1844, 1, p. 651.

ting land, the initial outlay on stock alone was heavy: four thousand sheep at a depression price of 7/- each in 1844 would have cost £1,400 —and a grazier on that scale would not have been considered large in the colony. Credit was readily available to settlers in the 1830's, but some security was required—except perhaps in the case of bank directors. It seems likely that a capital of £500-£1,000 was essential for success in squatting.

In these circumstances it is understandable that so many of the squatters, big and small, were from the gentry, and that so few of them had more lowly origins. Billis and Kenyon, in their exhaustive survey of Port Phillip squatters, found only three ex-convicts. "There were more cases — though these were not numerous — of immigrant shepherds (as distinct from old hands) acquiring runs, and ultimately becoming landholders."[34]

Where land was used for agricultural purposes, initial costs were also high. The farmer needed a dwelling, implements, working stock, seed, and subsistence for himself and his family for a year or two whilst clearing and cultivating his land. According to W. C. Wentworth, in the early 1820's the cost of clearing land and sowing it with wheat was £2/9/6 per acre on forest land and £3/15/6 on brush land, and this did not include rooting out and burning stumps.[35] The larger settlers used gangs of convicts to clear their land, but this resource was not open to small farmers.[36]

Bigge obtained from Surveyor-General Oxley an estimate of the cost of farming a 50-acre grant of good quality land over a period of three years. Assuming that such a farmer knew his job, received subsistence from the government for the first six months, and secured favourable prices for his wheat or maize, his costs of cultivation would exceed income from produce by £5/19/- in the first year; in the second year his income would exceed expenses by £49/10/-, and in the third year by £36/8/-. A small additional resource would arise from the value of poultry raised on the farm. Bigge concluded that this estimate was "not discouraging" for intelligent settlers possessing a moderate amount of capital; but for "the ordinary class of settlers, to whom sixty acres of land are usually allotted, the prospect afforded by this calculation is in very many cases a forbidding one".[37] It was indeed forbidding, especially when the grain market was narrow and subject to monopolistic manipulation.

The difficulties of small farmers are indicated by the fate of soldier-settlers. In the years 1829-31, before the Ripon regulations came into effect, a total of 103 discharged soldiers received orders for grants

34. R. V. Billis and A. S. Kenyon, *Pastures New* (Melbourne, 1930), p. 83.
35. W. C. Wentworth, *op. cit.*, II, pp. 141-3. These figures do not include costs of harvesting or marketing.
36. The clearing-gang system was instituted by Brisbane, on condition that the settler paid to government five bushels of wheat per acre out of the first crop on land so cleared. Darling noted that the big men who were "largely indebted" on this account "do not appear to have any intention of paying what they owe to the Government" (Darling to Huskisson, 28 May 1828, *H.R.A.*, I, xiv, p. 206).
37. J. T. Bigge, *op. cit.*, p. 24.

of land. Most of these grants were lots of 100 acres, the remainder being smaller areas; they were made subject to conditions of residence and cultivation for a period of years, after which deeds of grant would be issued. Actually, twenty-six of the orders were cancelled by the Crown in the following years, mainly because of non-residence; and when deeds of grant were issued from 1838 onwards only twenty-nine of them were in favour of the original ex-soldiers or of persons recognizable as their heirs. Deeds of grant for the other holdings were issued to new-comers who had presumably bought out the original holders. Seventeen of the holdings had come into the hands of four persons. For example, W. C. Wentworth was issued deeds of grant for five of the 100-acre holdings at Bathurst.[38]

Of course, it is inadvisable to be mechanical in treatment of broad questions of the kind considered here. As in all "new" countries, there were greater economic opportunities for the small man in New South Wales than in old countries. Experience in judging and working land and stock counted for much, as many a "new chum" with capital found to his cost. A little capital could be acquired by sharp practice as well as by saving. Nevertheless, the greater opportunities were available—as in the U.S.A.—to men with some initial capital rather than to workers.

"If any one wish to be a servant for twenty years first, and then begin to farm, Australia is his ground."[39] It was true of Van Diemen's Land as well as New South Wales. W. Bryan, a large landowner in the former colony, pointed out that "our land regulations prevent a poor man from getting hold of Crown land". Bryan reckoned that exclusive of payment for land a farmer of 50 acres needed a capital of at least £100, and that it would take a labourer at least five years to save that sum.[40] In South Australia, where Crown land was sold in sections of only 80 acres, conditions were rather different, though Wakefield probably exaggerated in claiming that "a great deal of land has been bought by labouring people in South Australia" by 1841.[41]

IV

If it be agreed that Wakefield's basic assumption about New South Wales was incorrect and that in fact few men of the labouring class could obtain Crown land there even at a low price per acre, the way is cleared for consideration of the reasons of the leading settlers for opposing successive increases in the minimum upset price. A minimum of 5/- per acre, the proceeds of which were devoted to assisting immigration of labour, suited them admirably. True, at first there was

38. Return of Grants of Land to Discharged Soldiers, *N.S.W. V. & P.*, 1847, 1, pp. 613-14.

39. An Emigrant Mechanic, *Settlers and Convicts* (ed. C. M. H. Clark, Melbourne, 1953), p. 226.

40. Committee on Disposal of Lands in British Colonies, 1836, evidence of W. Bryan, Qq. 2061-6, 2083.

41. Committee on South Australia, 1841, evidence of Wakefield, Q. 2696. Gipps claimed that to secure a given amount of water-frontage a settler in N.S.W. would have to pay more, at 12s. per acre, than a settler in South Australia would pay at £1 per acre (Gipps to Russell, 19 Dec. 1840, *N.S.W. V. & P.*, 1842, pp. 89-90.

criticism of the Ripon regulations, but it was short-lived. The opposition in the colony in 1831 was really directed not so much against the new system as against the government's intention to compel the big landowners to make immediate payment for the land they had bought in 1824-5 and to enforce payment of arrears of quit-rent. Opposition to the Ripon regulations disappeared when Bourke, to avoid "injustice to our old friends", gave the landowners two more years in which to complete payment, whilst the question of quit-rent arrears was quietly shelved.[42]

During the seven years 1832-7, some 1,143,000 acres of Crown country land were sold at an average price of about 6/2 per acre.[43] The average price per acre rose to 7/1 for a total of 315,000 acres in 1838; 10/3 for 283,000 acres in 1839; and £1/2/4 for 184,000 acres in 1840. Land sales declined sharply in 1841, most of the 86,000 acres then sold being in Port Phillip special surveys.[44]

These figures of average price paid reflect the progress of the land boom and increasing competition. But the fall in acreage sold in 1839-40 suggests that the increase of the minimum upset price to 12/- per acre was not unimportant. There was very little bidding for land offered at the new upset price in 1839; 88 per cent of the country land sold in that year was land which had already been advertised at the old upset figure—though, of course, the knowledge of the change affected the price actually paid. In 1840, as shown, a considerably smaller area of country land was sold—and even of that, 69,000 acres were sold from the upset price of 5/-. Yet 1840 was the peak of the land boom. What happened was that speculators turned to town land: of the great revenue of £324,072 derived from sale of Crown land in 1840, £118,611 came from town allotments.[45]

However, although the increase in the minimum price to 12/- was unpopular and contributed to the deflection of investment into town land, there was relatively little criticism whilst the land boom lasted and actual market prices were at or above the minimum. The report of the Immigration Committee of 1840 discussed land problems but made no attack upon the new minimum price; and E. B. Addis said later that the increase "was to the old colonist, merely nominal, aided

42. N.S.W. Government Notices, 25 Aug. 1831, 16 Sep. 1831; Bourke to Howick, 28 Feb. 1832, *H.R.A.*, I, xvi, pp. 544-5; Bourke to Goderich, 9 April 1832, *H.R.A.*, I, xvi, pp. 598-600; *Sydney Gazette*, 18 Aug. 1831, 8 Oct. 1831. The Committee on Crown Land Grievances, 1844, referred to increases in the scale of quit-rents in the 1820's, and expressed its belief that there would have been violent opposition to them, "had the colonists supposed they would be really exacted" (*N.S.W. V. & P.*, 1844, 2, p. 131).

43. *N.S.W. V. & P.*, 1843, Committee on Crown Land Sales Act, Appendix A.

44. Figures from Return of Territorial Revenue, 1836-46, *N.S.W. V. & P.*, 1847, 1, p. 615, to nearest thousand acres. See table of land sales in S. J. Butlin, *Foundations of the Australian Monetary System 1788-1851* (Melbourne, 1953), p. 326.

45. Town allotments sold amounted to 5,525 acres, compared with 2,785 acres sold for £21,206 in 1839. The revenue from country land sold in 1840 was also higher than in the previous year (£205,461, as against £145,507), but some of the country land sold in 1840 was evidently suburban or cultivation allotments, as it was sold from an upset price higher than £1 per acre.

by the bill system''.[46] The attack came in the early 1840's when, as a result of depression, Crown land could not be sold at 12/- per acre or, from 1843, at the new minimum of £1.

There was then unanimous agreement that land for grazing purposes was not worth 12/- or £1 per acre; indeed it was frequently claimed to be not worth even 5/-. Nevertheless, it should be noted that some colonists saw advantages in a high minimum price. There was the consideration that, if other factors remained constant, increases in the minimum price tended to raise the value of land privately owned. This point was particularly relevant for those persons who had bought speculatively during the boom for resale: W. C. Wentworth, after the increase to £1, is said to have expressed his desire for a minimum price of £5 per acre for Crown land.[47] But this sort of consideration was not probably of great importance during the depression, when other factors did not remain constant and land values fell.

There were other advantages of a high minimum price. To some landowners it meant security for their occupation, without purchase, of back runs adjacent to their land within the boundaries of location. Some squatters similarly felt secure in their occupation of runs beyond the boundaries. J. F. L. Foster spoke in a dual capacity. ''Being both a landholder and settler, I should, in both characters, regret to see any reduction in the price, as it would not only reduce the value of my land, but by rendering it easier for others to purchase my runs, would diminish the permanent interest I now hold in them.''[48] Again, a number of landowners favoured a high price as a means of preventing a recurrence of speculation in Crown land.[49]

The prospect of a reduction in the minimum price, after the increases, presented its own peculiar disadvantages to some people. It would have seemed unjust to those who had already bought land at the higher figure. P. Plunkett said that ''to lower the minimum price of land at present, would have the effect of deteriorating the value of land which has been purchased at a high rate''.[50] Moreover, there was a glut of privately-owned land on the market during the depression and its sale-price would have been further depreciated if cheap Crown land had been available. However, these expressions of minority viewpoints should not be allowed to obscure the fact that the great majority of colonists, including squatters until 1847, objected to the increases in the minimum price and favoured a reduction. A few individuals, such as Francis Macarthur, acknowledged the causal importance of such factors as drought, higher wages, and low wool prices in the depression of the early 1840's, but the general feeling was that the decline in Crown land sales was attributable directly to government policy.

46. *N.S.W. V. & P.*, 1844, 2, p. 332.
47. Speech by Macdermott, *Sydney Morning Herald*, 10 April 1844.
48. *N.S.W. V. & P.*, 1844, 2, p. 326.
49. *N.S.W. V. & P.*, 1844, 2, Committee on Crown Land Grievances, evidence of Bloxsome, Dunlop, Curlewis, Hardy, Potter, P. Macarthur.
50. *N.S.W. V. & P.*, 1844, 2, p. 298.

The influential sections of the colonists feared repercussions upon immigration. Here it is necessary to distinguish between two kinds of immigration: of workers, and of capitalists. Both kinds were desirable in general terms, especially for people with a stake in the community. Immigration of labour, assisted by the proceeds of Crown land sales, was a perennial problem for employers; but during the depression, when there was a labour surplus, it was immigration of capitalists that was mainly desired. James Macarthur said: "the question for consideration is—not what will be a sufficient price to provide labor for the cultivation of the land sold, but what price will be sufficient to prevent the monopoly of the fertile lands by mere speculators and jobbers, and yet not so high as to cause the diversion of British capital and enterprise from our shores to the United States and other young countries". In Macarthur's opinion, a fixed price of 5/- per acre was sufficient for these purposes.[51]

The main concern of graziers during the depression was not so much the level of wages—which had fallen—as the low price of live-stock. A constant influx of men of capital was considered necessary to raise this price. The grazier sold wool on the English market, but he also relied upon a considerable income from the sale in the colonial market of his natural increase of stock. The market for butcher's meat was limited, and buyers in the stock market were mainly graziers wishing to expand their operations and immigrants with capital for investment. Hence a constant general expansion of grazing was essential to the prosperity of the grazier.

Of course, if prices for live-stock were very low the grazier might prefer not to sell his surplus stock. But there were limits to his range of choice. He might need the cash income, or he might not have sufficient pastures on which to run his increased flocks or herds. Of some significance in relation to this question is a statement made by James Macarthur in 1837, in reply to a query as to how many sheep he and his two brothers had. "We never exceed 25,000, and our number varies between 18,000 and 25,000, according to the state of the market. If it is profitable to sell sheep we diminish our quantity; for we have found, from the disorderly habits of the shepherds, and the difficulty of keeping up a large establishment of servants, it is not so profitable to extend beyond that number. When you get beyond 25,000 there is a loss, from the difficulty of management, or rather a diminished profit."[52]

Complaints of inability to sell surplus stock, except at ruinously low prices, were very widespread in the years 1842-4.[53] Indeed, to many graziers the loss of profit from sale of surplus stock seemed more important than the loss from declining wool prices—probably because the total value of wool exports continued to increase as a result of a

51. *N.S.W. V. & P.*, 1844, 2, p. 210.
52. Committee on Transportation, 1837, evidence of Macarthur, Q. 2893.
53. e.g. *N.S.W. V. & P.*, 1842, Committee on Immigration, evidence of Icely, Cox; *N.S.W. V. & P.*, 1843, Committee on Crown Land Sales Act, evidence of Coghill, H. Macarthur. Latterly, some relief was provided by the innovation of boiling down stock for tallow.

larger wool clip.[54] The rough and ready accounting methods of the time contributed to this feeling: it was common to reckon that the wool clip would pay all expenses, profit being represented by the increase in stock.[55]

As a means of raising stock prices, a flow of immigrant capital was considered essential, and this was believed to be inhibited by the high price of Crown land. Actually, it could be cogently argued that the depression was a good time for immigrant capitalists to begin grazing operations, private land and stock being available at very low prices. Nevertheless, the colonists held to their view. Many of them were acutely aware that the question of emigration to New South Wales could not be considered in isolation. Thus the Committee on Immigration in 1842 asserted that the high minimum price of Crown land had "a direct tendency to divert the emigration of British capitalists from this Colony to the United States of America, where fertile lands may be purchased at one dollar and a quarter per acre".[56] Gipps believed that reports of bankruptcies in the colony were far more important than the price of Crown land in deterring immigration of capitalists; but he acknowledged that "when vast numbers of persons agree in any opinion, however erroneous, the mere concurrence of opinion will, for a time at least, produce an effect nearly as great as if the opinion were well founded".[57]

While graziers were united in their desire for an improvement in the stock market, landowners amongst them had further reasons for wanting a reduction in the minimum price and a continual flow of immigrant capitalists. As A. Windeyer pointed out, such an influx would brighten the prospects of landowners who wished to sell or let their land.[58] Moreover, a high minimum purchase price for Crown land encouraged extension of squatting, and many landowners felt that the terms of a squatting licence were so easy as to reduce the demand for, and value of, privately-owned land. They noted also that whilst the operations of squatters tended to raise wages through competition for labour, the squatters made no contribution, by land purchase, towards the cost of importing more labour.[59] Again, some landowners feared that immigration of capitalists would be adversely affected if squatters were granted leases of greater length than seven years, thus locking up squatting lands.[60]

54. Cf. Table of wool exports, S. J. Butlin, *op. cit.*, p. 316.
55. See M. H. Marsh's calculation, *N.S.W. V. & P.*, 1842, p. 394.
56. *N.S.W. V. & P.*, 1842, p. 336. Similarly in Reports of Committee on Crown Land Sales Act, 1843, and Committee on Minimum Upset Price of Crown Land, 1847.
57. Gipps to Stanley, 17 Jan. 1844, *N.S.W. V. & P.*, 1845, p. 336.
58. *N.S.W. V. & P.*, 1844, 2, pp. 253-4.
59. *Ibid.*, p. 278; *N.S.W. V. & P.*, 1843, Committee on Crown Land Sales Act, evidence of Coghill, Q. 52; *N.S.W. V. & P.*, 1842, p. 390.
60. W. Bradley, a member of the Committee on Crown Land Grievances in 1844, implied this in his questions to several witnesses. In reply to one such question, H. Dangar very generously suggested the setting aside, for sale to new settlers, of "the whole of the sea coast belt, from the Swan River, eastward and northwardly, to the Gulph of Carpentaria" (*N.S.W. V. & P.*, 1844, 2, p. 166).

Such expressions of antagonism between landowners and squatters were limited for a time by the requirements of the united struggle against Gipps's land policy. But when the squatters secured their main objects by the Order-in-Council of 9 March 1847 the landowners' hostility flared up. Lowe and his followers showed that the Order gave the squatters a vested interest in the maintenance of a prohibitory minimum price of £1 per acre, as a guarantee of continued occupation of squatting runs at low rents. "Can it be wondered at, that the older colonists, the grantees and purchasers of Crown Lands of former years . . . see with feelings of the bitterest disappointment, a policy which must make land, the commodity for which they have paid the Government so dearly, a drug—which must annihilate the capital invested in land, and expose the purchaser for a good consideration, to a ruinous competition with the occupant who acquires land at a nominal price?"[61]

By that time labour shortages had reappeared in the colony and the emphasis of argument against a high minimum price tended to turn from the feared effect on immigration of capitalists to that on immigration of labour. Thus a committee of 1847 declared: "Had the raising the price of land to a yet higher rate been the means of introducing a large number of the labouring classes, your Committee would gladly have acceded to it."[62] If little Crown land were sold there would be insufficient revenue to subsidize immigration of labour on the scale required. Even W. Ogilvie, a big squatter who approved of the Order-in-Council of 9 March 1847, still favoured a reduction of the minimum price to 5/- an acre as a means of providing an immigration fund—he used to cultivate 200 acres of land, but had "given up the cultivation for want of labor".[63] But Ogilvie was a landowner as well as squatter, and very few squatters were now willing to agree with him as to the desirability of reducing the minimum price. At one stroke, a solid body of support had been created for the minimum of £1 an acre, and the figure remained unchanged.

V

In all the controversy over the level of the minimum price, the aim advanced by Wakefield of preventing workers from becoming independent landholders "too soon" was not lost sight of. However, in the mid-1840's a new note began to appear: a desire for a middle class of peasants. In this sphere at least, as a tenant farmer, there was some scope for the small man. He might rent land within the boundaries from the Crown or from landowners. True, he needed capital to work a farm efficiently, but even without much capital he could scrape a living.[64] As far as Crown land was concerned, a number of small

61. Report of Committee on Minimum Upset Price of Land, *N.S.W. V. & P.*, 1847, 2, p. 527.

62. *Ibid.*, p. 530.

63. *Ibid.*, p. 562. Ogilvie reckoned that relatively little squatting land would be sold at 5s. per acre and his own squatting stations were well out in the Clarence River and Liverpool Plains districts.

64. George Russell observed a number of such "small proprietors or small tenantry with little capital and equally little enterprise or intelligence" in the Hunter Valley in 1850 (P. L. Brown, ed., *The Narrative of George Russell*, Oxford, 1935, p. 264).

farmers had annual leases of sections of 640 acres, though they were often subject to the hostility of neighbouring landowners.

More interesting was the position in relation to privately-owned land. At least until the boom of the late 1830's, not much country land changed hands privately. Men bought Crown land for their own use, not for resale or letting.[65] This situation changed somewhat during the boom, when there was much speculation in cultivation allotments as well as town land. But the high price paid in such cases does not suggest that there were any real opportunities for small men.

During the depression of the 1840's there was a glut of private land on the market. Probably not much of it was sold, but a considerable amount was let on long lease to small farmers. T. Barker said that "the landed proprietors are now also letting off their agricultural lands to small tenants". More specifically, J. Malcolm, a squatter and landowner in the Port Phillip district, described himself as "agent for several gentlement who have lands in that district and let out a considerable portion in small farms"; and E. Willis, of Geelong, had "a great deal of land leased out to tenants in small farms". Both Malcolm and Willis said that their tenants were formerly immigrant labourers who had saved perhaps £100 or £200 from their wages.[66] There were also a number of tenant farmers on the special surveys in the Port Phillip district.[67]

Behind this new emphasis on leasing agricultural land was the landowners' conviction—reinforced by experience during the depression—that agriculture, by comparison with grazing, was too risky and unprofitable to be worth the investment of much capital; whereas, as T. Walker puts it, small farmers "would be content with moderate returns".[68] Moreover, rents for agricultural lands were not negligible. In these circumstances the Committee on Immigration of 1845 featured the new note by urging the immigration not only of flockmasters and labourers but also of an intermediate class of small farmers.[69]

Some graziers were beginning to see that the settlement of small farmers had other advantages. J. R. Hardy was appointed police magistrate in the Yass area in 1837, and during the following three years the cost of transport of wool and supplies to and from Sydney was very high. Hardy therefore "formed a class of carriers and producers, by refusing to interfere with persons of the labouring class, except in cases of bad characters". The result was that by 1844 costs

65. Committee on Transportation, 1837, evidence of J. Macarthur, Qq. 2971-2. Cf. the situation in Van Diemen's Land, where graziers were averse to selling or letting their land in small lots for fear of sheep-stealing by small men (Committee on Disposal of Lands in British Colonies, 1836, evidence of Wood, Qq. 1311, 1321, and Bryan, Qq. 2068, 2071-2).

66. *N.S.W. V. & P.*, 1846, 2, Committee on Renewal of Transportation, evidence of Barker, Q. 27; *N.S.W. V. & P.*, 1845, Committee on Immigration, evidence of Malcolm, Q. 31; *N.S.W. V. & P.*, 1847, 2, Committee on Immigration, evidence of Willis, Qq. 5, 9-10.

67. I am indebted to Miss M. Kiddle for information on this point.

68. *N.S.W. V. & P.*, 1845, p. 621. Cf. the remark of V. Dowling: "at present I depend entirely on agriculture for a living, which may account, in some measure, for the difficulty I have in paying my way" (*N.S.W. V. & P.*, 1844, 2, p. 260).

69. *N.S.W. V. & P.*, 1845, pp. 604-5.

of transport and of locally produced wheat were very much lower, and there were "not less than fifty small settlers occupying crown land in this district, paying nothing to the government". In effect, Hardy—who believed that "large landholders are a nuisance"—had encouraged illegal squatting by small farmers, in the interests of graziers.[70] It may also be noted that there were some squatters beyond the boundaries who subsisted not primarily as graziers but as farmers, carriers, labourers, storekeepers, and followers of other occupations supplementary to grazing. Thus, according to W. Hovell, there was a number of small cultivators on the Tumut and Murrumbidgee. These were licensed squatters whose runs were small and who grew crops for sale to surrounding stations and in the town of Yass.[71]

A striking example of growing realization of the importance of small farmers to grazing operations was provided by Francis Macarthur. In 1844 he criticized the minimum price of £1 an acre but thought that 5/- would be too low as "it would afford too great facility to the acquiring of land by the savings of the wages of labor, to an extent which would defeat the object of the land fund; the price of labor would necessarily increase, to the prejudice of the Colony". So Macarthur advocated a price of 10/- an acre. Three years later his views had been modified considerably. He then favoured prices of 5/- an acre for grazing land and 10/- for agricultural land; the former category of land to be sold in blocks of 640 acres and the latter in lots of as little as 20 acres. He thought that "land should be sold at a price that a man of small means, say with £100, or half that sum, might be able to purchase land, which at present is impossible".

T. Icely and J. F. L. Foster questioned this viewpoint, on the grounds that workers would become employers and that small farmers would provide competition for landowners who engaged in agriculture. Macarthur was not moved by these arguments. He believed that the current demand for labour would not last for ever—"in ten or twelve years I believe the demand for pastoral labor will be very much curtailed"—and he saw the value of small farmers to graziers. In criticizing the Order-in-Council of 9 March 1847 he pointed out that in reference to the settled districts the Order provided for annual leases by the Crown "exclusively for pastoral purposes". This, said Macarthur, was "most cruel". It would affect existing Crown lessees within the boundaries, many of whom were in the County of Argyle, where Macarthur's own estate was located. "These men who are now upon these lands, and who are very useful to the settlers around, to whom they act as carriers, would have to go off the lands if they were not allowed to grow grain."[72] It was on behalf of such interests in the Counties of St. Vincent and Auckland that Robert Lowe, in May 1847, presented a petition to the Legislative Council urging that the minimum price of

70. *N.S.W. V. & P.*, 1844, 2, p. 313. H. Hume, also of Yass, complained of illegal squatters, "many of very exceptionable character" (*ibid.*, p. 316).

71. *N.S.W. V. & P.*, 1847, 2, p. 576.

72. *N.S.W. V. & P.*, 1844, 2, p. 307; *N.S.W. V. & P.*, 1847, 2, pp. 531-6; Order in Council, 9 March 1847, ch. IV, sec. 1.

Crown land be reduced to 5/- an acre and that small agricultural allotments, of 30 to 100 acres each, be put up for sale at that price.[73]

It would perhaps be wise not to place great emphasis on this evidence of a desire for the establishment, on a limited scale, of a peasantry. It is possible that most graziers held to the old view. Nevertheless, the new development was a very interesting one and deserves some consideration in later Australian history.

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73. *N.S.W. V. & P.*, 1847, 1, p. 11.

AN ESTIMATE OF THE MAGNITUDE OF INCOME REDISTRIBUTION IN NEW ZEALAND

There is a great deal of talk about income redistribution, but there is little knowledge of its magnitude, and this makes all our talking rather empty. An attempt has been made to estimate the magnitude of income redistribution in Denmark, and an estimate has been made for the U.K. of redistribution through social services.[1] The present paper attempts to get an impression of the magnitude of redistribution in New Zealand. It approaches the problem not in the usual aggregate manner (how is income redistributed between some large income groups?), but in an individual manner. It takes four incomes, £520, £1,040, £2,080 and £4,160 p.a. (ratio 1:2:4:8) and tries to answer the question: What are these incomes after redistribution? It assumes two sets of families receiving these incomes, one set (A, B, C and D) consisting of husband, wife and two dependent children going to a primary school (a set of young families, husband and wife between 30 and 35 years of age), and a set (E, F, G and H) consisting of husband and wife only (older couples, about 50 years of age). It is assumed that the families of each of the sets are in exactly the same situation in all relevant respects (except income); that the wife has no income of her own; that there are no deductions for life insurance premiums. The estimate applies to the fiscal year 1952-3; the income tax paid for that year in 1953-4 is deducted from the income received in 1952-3.

Redistribution happens through subtraction (taxation) and through addition (social services, social security, subsidies, free education[2]).

1. *Taxation*

There is one egalitarian tax: the personal income tax. There are the following presumably disegalitarian taxes: sales tax, customs and excise duties on tobacco, cigarettes, etc., excise duty on beer, customs duty on wines and spirits, excise duty on sugar, customs duty on motor spirits, other customs duties, fees, etc., under the Transport Act, heavy traffic fees, tyre tax, mileage tax, duties payable by racing clubs, amusement, films hire and lottery taxes. There is one neutral (proportional) tax: the social security charge. And there are some taxes the distributive effect of which is very uncertain: company income tax, adhesive and impressive stamps, duty on instruments, land tax, estate, succession and gift duties,[3] local rates. The one definitely egalitarian tax yielded £m44 (1952-3), the disegalitarian taxes £m65, the neutral tax £m45, the uncertain taxes £m63. Our calculations will disregard the neutral and uncertain taxes. The error resulting from disregard-

1. A. T. Peacock (ed.): *Income Redistribution and Social Policy* (Jonathan Cape, London, 1954).

2. There is also an addition in the form of assistance with housing (state houses at low rents, "suspensory loans", relatively cheap mortgage loans), but this is left out of account for two reasons: the distribution of the benefit of this assistance is very random; and the benefit is relatively small.

3. These are progressive, but they do not fall on incomes, and it is with *income* redistribution that we are concerned.

ing the uncertain taxes must be small, because different errors are likely to offset each other.

The personal income tax has a powerful egalitarian effect. It reduces the incomes of the four young families to the following amounts: £520 (no tax), £962/15/-, £1,722/0/5, £2,785/10/-. The ratio of their incomes is now 1 : 1·85 : 3·31 : 5·36. It reduces the incomes of the four older couples to £509/10/1, £936/4/7, £1,676/8/2, £2,724/9/2; ratio: 1 : 1·84 : 3·29 : 5·37.

What are the redistributive effects of the disegalitarian taxes? In the absence of statistics of family expenditure, only a very rough and tentative answer to this question can be attempted. The answer is necessarily based on a number of assumptions. It follows below; in the case of two taxes only the result of the calculation is given, because it is too complicated. Amounts are rounded off to shillings.

Sales Tax (revenue £m22)

Suppose that it is diffused proportionately to consumption. Suppose that consumption (income minus income tax and saving) is £500, £900, £1,560 and £2,400 for A–D, and £480, £850, £1,400 and £2,100 for E–H. Total consumption in 1952-3 amounted to £m464. Then each family contributed:

A	..	£23 14 0		E	..	£22 15 0	
B	..	£42 13 0		F	..	£40 6 0	
C	..	£73 19 0		G	..	£66 7 0	
D	..	£113 16 0		H	..	£99 11 0	

Customs and Excise Duties on Tobacco, Cigarettes, etc. (revenue £m7·6)

Customs duty on imported cigarettes was 45/6 per 1,000, excise duty on N.Z.-made cigarettes 33/6 per 1,000. Assume that each family smokes 175 cigarettes per week (25 per day), that is 9,100 per year; round off to 9,000. No distinction is made between the younger families and the older couples, because young children at primary school do not smoke, and it is doubtful whether people of 50 smoke more than people of 30-35, even if they are somewhat better off because they have no children to support. Assume that A and E smoke the cheapest (2/- per 20) cigarettes, B and F, C and G, and D and H progressively more expensive cigarettes. The assumptions are based on information received from a retailer; the assumption regarding quantity agrees with a calculation of cigarette consumption based on the figure of total tobacco consumption (weight), the weight of cigarettes, and the probable number of smokers. This calculation leads to 8,700 cigarettes for two people of smoking age.

A and E	pay	9 x 33½	sh. =	£15	1	0
B and F	„	9 x 35	sh. =	£15	15	0
C and G	„	9 x 39	sh. =	£17	11	0
D and H	„	9 x 45	sh. =	£20	5	0

Excise Duty on Beer (revenue £m5·5)

Consumption per head in 1952 19·3 gallons, that is total consumption of 39 m. gallons. Suppose that only males of 20-64 drink beer. Number 1952-3 approximately 550,000. Each drinks 71 gallons. Duty 3/- per gallon plus 1d. for every unit of specific gravity above 1,036. Duty on 71 gallons: 71 × 3/- = £10/13/- (additions to duty for extra gravity may be ignored). If total revenue from the duty is divided by the assumed number of beer drinkers, each pays £10. Take the latter amount. People with lower incomes drink more beer than people with higher incomes, who drink more spirits. Probably beer consumption is somewhat less in the young families, because they can afford it less.

Assume the following incidence:

A	£12,	B	£10,	C	£8,	D	£6	Average
E	£14,	F	£12,	G	£10,	H	£8	£10

Customs Duty on Wines and Spirits (revenue £m2·9)

Consumption of wines and spirits is small in the low income group. Suppose that only males 20-64 drink wines and spirits. Then the average contribution of each is: £m2·9 ÷ 550,000 = £5/5/-. The 8 families contribute £42. Assume that consumption is somewhat greater in the older than in the younger families: the former contribute together £24, the latter £18. Suppose these amounts are distributed as follows:

A	pays	£0	10	0	E	pays	£1	0 0
B	„	2	10	0	F	„	3	0 0
C	„	5	0	0	G	„	7	0 0
D	„	10	0	0	H	„	13	0 0

Excise Duty on Sugar (revenue £m0·73)

Assume that consumption per head is equal in all families. Then each person paid £m0.73 ÷ 2mm, that is almost 7/-. Each of the younger families paid £1/8/-, each of the older couples 14/-.

Duties Payable by Racing Clubs (revenue £m3·3)

Suppose that all males between 20 and 65 pay equal shares (have equal shares in betting). Then each of the 8 families pays £m3·3 ÷ 550,000 = £6.

Customs Duty on Motor Spirits (revenue £m8·5)

The result of a rather complicated calculation (too complicated to be set out) is the following incidence:

A	pays	£5	19	0	E	pays	£5	16 0
B	„	16	18	0	F	„	16	7 0
C	„	37	5	0	G	„	35	7 0
D	„	65	19	0	H	„	62	8 0

Other Customs Duties (revenue £m11.4)

Assume that they are diffused proportionately to consumption. Then the incidence is:

A	pays	£12	6	0	E	pays	£11	16	0
B	„	22	2	0	F	„	20	18	0
C	„	38	6	0	G	„	34	8	0
D	„	58	19	0	H	„	51	12	0

Films Hire, Amusements and Lottery Taxes (revenue £m0·6)

Suppose that all people between 15 and 65 pay equal share. Number of those people, 1,200,000. Each adult in the 8 families pays £m0·6: 1,200,000 = 10/-. Each family pays £1.

Fees, etc., under Transport Act, Heavy Traffic Fees, Mileage Tax (revenue from fees £m1·0 and 1·0, from tyre and mileage taxes £m0·06)

The outcome of another rather complicated calculation is the following incidence:

A	pays	£1	17	0	E	pays	£1	16	0
B	„	6	7	0	F	„	6	3	0
C	„	8	15	0	G	„	8	4	0
D	„	14	18	0	H	„	13	16	0

Addition gives the following result. The four young families pay £79/15/-, £124/13/-, £197/4/-, £298/5/-; the four older couples pay £79/18/-, £122/3/-, £186/11/-, £276/6/-.

If we add up these amounts (paid for disegalitarian taxation) and the amounts paid for income taxation, and if we subtract their sums from the original incomes, we get the following incomes after tax:[4] young families £440/5/-, £838/2/-, £1,524/16/5, £2,487/5/-; older couples £430/12/1, £814/1/7, £1,489/17/2, £2,458/3/2. The ratios are now: young families, 1:1·90:3·46:5·65; older couples, 1:1·89:3·46:5·71. It appears that the regressive effect of the disegalitarian taxes is not nearly as strong as the progressive effect of the personal income tax.

2. *Social Services*

The subtractions from incomes due to taxation are made on the basis of a calculation of what is actually paid by the different families (on "the actual basis"). This method of calculation cannot be applied to some of the social services. The eight families do not receive age or superannuation benefits; they would not normally receive invalidity benefits; they might not receive any health benefits. It would, however, be wrong to leave these benefits out of account. The state has promised these benefits on the fulfilment of certain conditions, and this promise is worth something. It relieves people from the necessity or desirability of taking insurances against the risks of old age, invalidity, ill health, etc. The state donates, so to speak, the insurance. The annual value of this donation is the annual premiums which the potential beneficiaries save, the annual premiums which they would have had to pay if they had taken an insurance. The additions to incomes due to most of the social security benefits and to the health benefits are calculated on this basis (the "insurance basis"). It is applied to all social security bene-

4. Disregarding the neutral and uncertain taxes.

fits except to the family benefit, which is calculated on the actual basis, and to the unemployment and orphans' benefits, which are left out of account because of their practical insignificance. The actual method is applied to all other welfare measures, for which the insurance method is unsuitable.

The application of the two methods is inconsistent. In order to prevent, as much as possible, a wrong impression which might be caused by the inconsistency, I have taken the two sets of families for our estimates. The actual method gives very different outcomes for cases with and for cases without dependent children. Hence I have assumed that the one set of families has children, the other has not.

The health benefits do not include the subsidies to hospital boards and the cost of mental hospitals. It is assumed that the subsidies to hospital boards benefit the two lower income recipients (the higher income recipients are assumed to go into private hospitals). The total of these subsidies (£m12) is credited to each of the families A, B, E and F in the following way: the total is divided by the estimated number of persons in the income groups below £1,600 p.a.; the quotient is multiplied by the number of the members of the families A, B, E and F. The expenditure on mental hospitals (£m2·4) is supposed to benefit all adults, and each family is credited with the average amount per adult multiplied by two.

The dental service for school children and the milk-in-schools scheme are also outside the health benefits. The cost per child is credited to each family according to the number of their children. The cost of primary school education is imputed only to families A and B (on an average basis), as the children of C and D are assumed to go to a private school. The subsidies are credited to the four families on a *per caput* basis.

It is assumed that only the people with the income of £520 will pass the means test and will qualify for the benefits subject to it.

Again the year 1952-3 is taken.

The additions to income, estimated or calculated as indicated above, are as follows:[5]

	A	B	C	D	E	F	G	H
Age benefit	31·16				31·16			
Invalid and sickness benefits	3·2				3·2			
Widows' benefit ..	6·0[a]				4·8			
Superannuation benefit		20·3	20·3	20·3		20·3	20·3	20·3
Family benefit ..	52·0	52·0	52·0	52·0				
Health benefits ..	15·2	15·2	15·2	15·2	15·2	15·2	15·2	15·2
Hospital subsidies ..	30·12	30·12			15·6	15·6		
Dental service for school children	2·0	2·0	2·0	2·0				
Milk-in-schools scheme	2·0	2·0	2·0	2·0				
Primary school education	60·0	60·0						
Subsidies	28·0	28·0	28·0	28·0	14·0	14·0	14·0	14·0
Total	230·8	209·17	119·5	119·5	83·14	64·11	49·5	49·5

a. Including mothers' allowance.

5. Amounts are rounded off to shillings.

Limitations of space make it impossible to give further details of the calculations.

Combined Effect of Taxation and Social Services

Combination of subtractions and additions gives total income redistribution. The incomes of the four young families are, after subtractions and additions, £670/13/-, £1,047/19/-, £1,644/1/-, £2,606/10/-; ratio: 1 : 1·56 : 2·45 : 3·89. The incomes of the four older couples are £513/6/-, £878/13/-, £1,539/2/-, £2,507/8/-; ratio: 1 : 1·53 : 2·68 : 4·37.

Our estimate suggests that redistribution in New Zealand is of considerable magnitude. For both sets of families the highest income is eight times the lowest before, approximately four times the lowest after redistribution.

It is obvious that the estimate cannot claim any accuracy. It is based to a large extent on assumptions which may not be quite realistic and to some extent on a somewhat arbitrary method of calculation. However, I should be surprised if a calculation based on exact data and using impeccable methods (suppose such a calculation were possible) would give a substantially different result.

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NOTES

ECONOMIC GROWTH AND CAPITAL ACCUMULATION

A Comment

The propositions in Professor Swan's article[1] agree pretty well with my *Accumulation of Capital*, and I cannot quite understand what it is in the book that he finds so indigestible.

I am pleading for the observance of two simple methodological rules for the conduct of theoretical analysis, which are never disputed in principle though often violated in effect. The first is to draw a clear distinction between a comparison of positions which differ in some specified respect and an analysis of a change taking place in a given position. The second is not to express a quantity without stating the units which it is a quantity of.

Professor Swan violates both rules in the first part of his article and then tries to excuse himself in the appendix, which seems to be rather a back-foremost procedure. Let us rather try to restate the substantive propositions without violating the rules.

Professor Swan expresses himself in terms of a narrative but his main point lends itself better to terms of a comparison between equilibrium positions (the points 1 and 2 in his diagram).

The main proposition[2] is that when there are two economies with the same corpus of technical knowledge and with the same proportionate rate of growth in employment, but one with a higher ratio of saving to income than the other, then, when each is growing at the same rate, in equilibrium conditions, the one with the higher ratio of saving has a correspondingly higher ratio of capital to output.

This proposition is derived by inverting Mr. Harrod's formula. G is the percentage rate of growth of output per annum, s is the proportion of income saved and C is the ratio of the stock of capital to a year's output. $G = s/C$ or $C = s/G$. Each economy has a history behind it in which its own G, C and s have been constant for some time at the values now obtaining. G is the same for both of them. In one economy s is twice that in the other (in Professor Swan's example). Therefore C is also twice as great.

It is to be observed that in certain conditions it is impossible for C to assume the value required to reconcile a high s with a low G (this is the point that worries Mr. Harrod). In that case it is s that must give way, or the assumption of full employment cannot be maintained. However, Professor Swan tacitly assumes that the range of variation of C is such as to give him all the room to manœuvre that he requires.

To make sense of the formula it is obvious that capital and income must be measured in the same units.

Professor Swan wants to measure capital in a physical unit.

1. *The Economic Record*, Nov. 1956.
2. I am not discussing the treatment of land or of technical progress. Once the main point has been cleared up they would not present any further difficulties.

> "... Capital is made up of a large number of identical meccano sets, which never wear out and can be put together, taken apart, and reassembled with negligible cost or delay in a great variety of models so as to work with various combinations of Labour and Land, to produce various products, and to incorporate the latest technical innovations illustrated in successive issues of the Instruction Book. ..."

This is a helpful piece of mental scaffolding, which fulfils the same purpose as Wicksell's assumption that different stocks of capital vary only in the length of life of their components. In each case we have a clear meaning to give the concept of a physical stock of capital.

He goes on:

> "... Output consists of goods (including meccano sets) that are all produced and sold at constant price-ratios amongst themselves, no matter how the rates of wages, rents and profits may vary. ..."

This limits him to a special case. In general, higher wages and a lower rate of profit entail different relative prices for different goods —in particular different relative prices for capital goods as a whole and consumption goods as a whole. When relative prices are different in the two economies, Professor Swan must come off the fence, and say which kind of good he is taking as the *numéraire*.

If he means by the rate of saving the rate of output of meccano, then, when the rate of saving is specified, everything is specified in physical terms, but income has to be measured in terms of meccano, so that the ratio of income to saving depends upon the price of meccano, and the prospensity to save has to accommodate itself accordingly.

It is more natural (following Mr. Harrod) to define income as the value of a year's output in money of constant purchasing power over consumption goods. This involves only the familiar index-number ambiguity, which can be dealt with by the familiar methods. The ratio of saving to income is then the ratio of the value of a year's output of meccano to the value of a year's total output, and a given rate of saving has a larger or smaller content in terms of meccano according as the price of meccano is lower or higher.[3] This seems to me to be quite in line with Professor Swan's argument, and it was only the excessive caution which made him fiddle the assumptions so as to rule it out that prevented him from stating it himself.

If in reality we could find a technical unit of capital corresponding to Professor Swan's meccano or Wicksell's period of production, then, in comparing two positions with different values of capital per unit of output, we could detect how much of the difference was due to having a different amount of physical capital and how much to a different price per unit of physical capital. We could further detect how much of that difference in price was due to a difference in wages cost

3. It is possible for the price of a piece of meccano to be lower in the economy where the wage rate and the total value of capital are higher, for, as Professor Swan emphasizes, lower interest cost may more than offset higher wages cost. I do not know why he thinks that I associated this with the "perverse" case in which the degree of mechanization is lower at a higher wage rate. Both phenomena, of course, are connected with the element of interest in the cost of capital goods, but otherwise they do not have anything to do with each other.

and how much to a difference in the profit margin, and we could detect how much the difference in the profit margin was due to a difference in capital in the investment sector per unit of output of physical capital and how much to a difference in the rate of profit.

When physical capital cannot be represented in a technical unit (a meccano set or a length of time) we have to resort to some other method to separate, as Professor Swan puts it, the "productive" from the "financial" element in the difference between two stocks of capital. This is what my system of analysis is intended to do. To place the two economies in my scheme we need to know the technical conditions, which are in common, and the value of capital per head and the real wage rate in each economy. Exactly the same data are required to compile Professor Champernowne's chain-index. I certainly do not "object" to anyone who pleases compiling the chain-index, since it can always be taken to pieces again to show what is really happening, but its relation to the rest of the argument seems to be that of the fifth wheel on a coach.

Professor Swan finds my treatment of the rise in the degree of mechanization in discontinuous steps bizarre, though nowadays, in linear programming, it is quite familiar. What would continuity in the spectrum of techniques mean? It would mean that an indefinitely small rise in wages causes a rise in the degree of mechanization to be profitable. Consider any position where each producer is in equilibrium. Equilibrium means that the marginal returns on factors are proportional to their costs. One pound more per week spent on labour would save one pound per week of capital cost (the opportunity cost of capital being a rate of interest equal to the going rate of profit). There are two techniques, one using a little more capital per man than the other, which give the same cost per unit of output. If one pound per week seems too coarse, make it one pound per year, or one shilling per year. However fine you make the division, there are always two techniques yielding the same rate of profit. When at a given wage rate Gamma and Beta techniques are equally profitable, an indefinitely small rise in the wage rate would make Beta and Alpha equally profitable. I prefer to take a case where the required rise in wages is finite, so that, for a somewhat smaller rise, only Beta technique would be eligible. This is not a matter of "realism", but a device to enable us to see the relation between wages and techniques more clearly.

The reason why Professor Swan objects to this procedure is, I imagine, because he thinks of the wage rate as being determined by the physical marginal productivity of labour, which in turn is determined by the amount of meccano in existence, so that a situation in which appreciably different wage rates are compatible with the same quantity of meccano fills him with consternation. But in his story, just as in mine, the rate of wages has to be such as to be compatible with full employment when the given rate of investment is going on. Professor Swan postulates that the technical conditions are such that the relative shares of wages and profits are independent of the level of wages (there is "unit elasticity of substitution"). This assumption

obviously could not hold good over ranges where there are large discontinuities in the spectrum of techniques. But there is no reason to confine the argument to the special case of constant relative shares, and since I suppose that he would agree that it is natural to assume that saving out of profits is greater than saving out of wages, he must agree that in equilibrium the level of wages is such as to make the distribution of income such as to make full-employment saving equal to investment.

Given the propensities to save, the whole system is perfectly determinate whatever the technical conditions may be.

Professor Swan somehow suggests that the neo-classical conditions (marginal products equal to factor prices) and the Keynesian conditions (saving equal to investment at full employment) are mutually exclusive, and take it in turns to determine the level of wages. If we could agree that equilibrium requires the Keynesian and the neo-classical conditions to be satisfied simultaneously, the whole confusion would be cleared up.[4]

In any case, as Professor Swan says in a slightly different connection: "The multiplicity of explanations shows how treacherous is the idea of causation amongst interdependent variables." It is never right to say that the marginal productivity of labour *determines* wages. All we can say is that, for a given marginal product of labour, equilibrium will obtain if the other conditions (in particular, the amount and form of capital in existence, the rate of investment and the propensities to save) are such as to make the wage rate equal to it. If the other conditions make the wage rate different, the given marginal product is not compatible with equilibrium.

Another matter which puzzles Professor Swan is my attachment to the "Wicksell effect" or "absorption of saving" due to a rise in real wages. Here I must admit that in my first attempt to deal with the subject I caused some unnecessary confusion by a misleading use of language. I was treating of comparisons between equilibrium positions, yet I talked about Wicksell and other "effects", which suggests a movement-time.[5]

4. A very simple but very important misunderstanding comes to light in the footnotes. Mr. Kaldor and I argue that in a static state, with zero net investment and no saving out of wages, profit on capital would be equal to the expenditure of capitalists. Professor Swan regards this as a ham-and-eggs argument. Evidently he supposes that a capitalist cannot spend anything on consumption when he has no income. This is absurd. The capitalist does not even need to "dishoard" in order to consume. He commands credit at the shops. His orders raise demand, raise prices, generate profits, and, provided his fellows have been doing likewise, dividends come in in time to settle the bills. My endeavour is to reconcile the Keynesian and the neo-classical theory, but Professor Swan insists on keeping them locked up in separate boxes.

5. In the mathematical part of his argument Professor Swan frequently makes use of small *changes* in e.g. the wage rate as though equilibrium could instantaneously be re-established after such a change. An equilibrium with a different wage rate entails a different past history. It is of no use to "revalue" the stock of capital. It has to be completely re-created in the form appropriate to the new wage rate. (Even with the indestructible meccano, it has to be taken to pieces and reassembled.) To make the difference in wage rate "a small one" is the housemaid's excuse. On the other hand as large a change in the stock of capital as can be made at a constant wage rate may take place without disturbing equilibrium.

In connection with comparisons of equilibrium Professor Swan's statement that "the Wicksell effect is nothing but an inventory revaluation" has no meaning. In equilibrium, each economy has its own rate of profit. All the capital goods in existence in it today were produced with that rate of profit ruling, and the reproduction cost of each is equal to its historic cost. There was never a moment when any inventory had to be revalued. No change has ever taken place in the value of a stock of capital except the value of the change in that stock,[6] and the economy with the larger value of capital must, over its history, have performed correspondingly more saving.

So much for the comparison of the two equilibrium points on Professor Swan's diagram. To discuss a movement from one to the other is a much more complicated matter and if it is to be taken seriously we need to know a great deal more than he tells us—in particular, what is the state of expectations in an economy when the rate of profit is falling as time goes by.

I will not attempt to rewrite his story, but only try to make clear what I understand by the Wicksell effect in this context.

We may begin by borrowing Professor Swan's indestructible and versatile meccano.

As the stock of meccano increases relatively to labour employed, real wages rise and the rate of profit falls. The wages cost of a new piece of meccano produced by an unchanged technique is therefore higher at a later than an earlier date; the normal or "full cost" price of a new piece of meccano is not raised in proportion to the rise in wages, for the normal price has to be reckoned on the basis of the now lower normal rate of profit. The normal price of a new piece of meccano may be less at the later date, for the reduction in the interest element in its "full cost" may more than offset the rise in wages cost. (There is, of course, no reason to expect actual transactions to be made at normal prices while the economy is in a state of transition.)

Professor Swan calls the case where the normal price of a piece of meccano falls as the wage rate rises a "reverse Wicksell effect" whereas I prefer to keep the elements of cost separate and call only the change in actual wages cost a Wicksell effect. This is merely a matter of terminology.

At any moment the cost of a new piece of meccano has altered, since an earlier date, and existing meccano may be revalued accordingly. A rise in the value of the existing stock of capital (in the case where new meccano has risen in cost) is a pure matter of book-keeping, and cannot in any sense be said to "absorb saving" (though it does alter the amount of "waiting" that an owner of old meccano is doing —he must not treat the rise in its value as income and consume it). Professor Swan therefore seems to me to be completely off the rails when he identifies this revaluation with the Wicksell effect.

Now let us suppose that each piece of meccano has a limited life. The new meccano being produced at any moment is not all net invest-

6. I must say that I take it rather amiss that Professor Swan should think that I do not understand this distinction.

ment; part of it is replacement. It seems to me quite natural to speak of the excess of replacement cost over historic cost of a piece of meccano as "absorbing saving", and I should regard the Wicksell effect as being measured by the excess of the wages cost of the replacement at the date when it is made over what it would have been if the wage rate were still the same as at the date when this particular piece of meccano was constructed.

In any case, it is the actual replacement cost of capital goods that matters. A "revaluation of inventories" neither absorbs savings nor provides finance for replacement.

When we have to get on without the idea of pieces of meccano this simple way of dealing with the problem will not work. My scheme of analysis is intended to make it possible to discuss accumulation in spite of the fact that capital cannot be measured in physical units, but it is evidently not very easy to follow and I feel that I owe Professor Swan (and any other readers I may have) an apology for causing so much trouble. I can only plead that I was doing my best. It is not really my fault that capital does not consist of pieces of meccano.

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AN AUSTRALIAN CONSUMPTION FUNCTION*

The favourite child of Keynesian econometrics, the consumption function, has everywhere let down its admirers. In Australia, the ratio of consumption to personal disposable incomes (at current prices) has varied in the post-war years between 79 per cent and 90 per cent. The year-to-year variations have been much too large to make this functional relationship a reliable tool for forecasting. Conversion of the function into real terms, with all the price-index snags which this encounters, does not appreciably improve the situation. Can anything be done about this?

It has frequently been noticed that the variations in the ratio of consumption to personal disposable incomes in Australia are closely related to year-to-year fluctuations in the incomes of farmers. This appears to reflect a tendency of farmers not to adjust their current consumption expenditure to the large short-term fluctuations in their incomes. Perhaps the simplest hypothesis on these lines is to assume that consumption (C) is related, not to total personal disposable incomes (PDI) but to *non-farm* disposable incomes (NFDI).[1]

* We are indebted to Dr. C. E. V. Leser, who kindly carried out the statistical computations for this note.

1. In either case, *disposable* income is here obtained by subtracting from income the relevant personal income taxes (excluding estate and gift duties)—in the one case all personal income taxes are subtracted to obtain PDI, in the other personal income taxes paid by the non-farm sector are subtracted to obtain NFDI.

No breakdown of personal income tax between farmers and non-farmers is published. Non-farm income tax for the post-war years has been estimated from data published in the *National Income* White Paper, the *Reports* of the Commissioner of Taxation, and (for 1954/5 and 1955/6) from the Commonwealth Budget Papers. It has been assumed that the shares of the two sectors in total income tax paid in

Table I compares the ratio of C to NFDI with the ratio of C to PDI for the post-war years. It appears that the ratio of C to NFDI not only is a good deal more stable but also happens to be very close to unity. We are tempted to proclaim, as an empirical law for the Australian economy, that *consumption equals non-farm disposable incomes.* More soberly, the regression line for the function (data from Table I) is

$$C = 67{\cdot}9 + 0{\cdot}9598 \text{ (NFDI)}.$$

The rest of this note deals briefly with five questions about this consumption function which suggest themselves:

(a) How can we account for it?

(b) How stable is it?

(c) Does it hold for the pre-war as well as for the post-war years?

(d) What is its form in real terms?

(e) Of what practical use is it?

(a) A stable relationship between total consumption and non-farm disposable incomes can plausibly be rationalized by asking what determines consumption expenditure by farmers if it is not governed by current farm incomes. It is not unreasonable to suppose that farmers' consumption levels are in various ways (such as direct personal contacts, availability of goods and services, advertising) influenced by consumption levels in the rest of the community.[2] If farm consumption is a function of non-farm consumption, which in turn is a function of non-farm disposable incomes, total consumption will be a function of non-farm disposable incomes.

It has sometimes been suggested that farm consumption follows farm incomes with a time lag. Various lags have been tested: that current farm consumption is a function of last year's farm incomes, of the average of this year's and last year's farm incomes, or of the average of this year's and the preceding two (or three) years' farm incomes. Each of these gives a distinctly less good fit than the thesis that farm consumption is a function of current non-farm disposable incomes. It seems not unlikely, however, (though the available data are inadequate to test this) that farm investment, including expenditure on durables such as cars, moves with current farm incomes, or follows them with a lag.

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any year are proportionate to the ratio of the incomes of the two sectors in the preceding year weighted by the average tax rates applied to each sector (in the preceding year).

For the pre-war years, the data needed for this method of estimate are not available. Since income tax rates were lower and varied less, it has been thought sufficient to divide total income tax paid in the ratio of farm to non-farm incomes given by H. P. Brown, *Economic Record*, 1949.

2. Mr. J. G. Crawford has pointed out to us another possible influence of non-farm on farm consumption standards. Government measures of aid to farmers during the 'thirties were explicitly based on the principle that farmers were entitled to an income which would enable them to maintain a standard of living (excluding luxury expenditure) comparable to standards prevailing among city people.

TABLE I

£m.	1946–7	1947–8	1948–9	1949–50	1950–1	1951–2	1952–3	1953–4	1954–5	1955–6
1. Personal income	1,345	1,622	1,900	2,204	2,897	3,214	3,501	3,643	3,827	4,079
2. Personal income tax	154	162	198	194	351	399	388	394	361	387
3. Personal disposable income	1,191	1,460	1,702	2,010	2,546	2,815	3,113	3,249	3,466	3,692
4. Income of farmers	165	261	323	423	700	526	594	532	453	(406)
5. Non-farm incomes	1,180	1,361	1,577	1,781	2,197	2,688	2,907	3,111	3,374	(3,673)
6. Personal non-farm income tax	132	131	145	128	154	236	287	263	255	304
7. Non-farm disposable income	1,048	1,230	1,432	1,653	2,043	2,452	2,620	2,848	3,119	(3,369)
8. Personal consumption	1,069	1,261	1,464	1,661	2,018	2,380	2,545	2,815	3,079	(3,324)
C ÷ PDI	·898	·864	·86	·826	·793	·845	·812	·866	·888	·9
C ÷ NFDI	1·02	1·025	1·022	1·005	·987	·971	·971	·988	·987	·987

Figures in general are from the *National Income and Expenditure* White Paper, 1955-6. However, data for 1946-7 and 1947-8 are from the 1954-5 White Paper. Personal consumption includes private remittances overseas. Refer to footnote 1.

(b) How good a fit does the proposed function give, compared with say the PDI function? Since each of the series C, NFDI and PDI rose rapidly after 1946/7, it is clear that the correlation between any pair of them will be high. We can overcome this difficulty by taking the regression of year-to-year changes in consumption on year-to-year changes in income. Here the relation between changes in C and changes in NFDI yields a correlation coefficient of 0·36 for the relation between changes in C and changes in PDI.

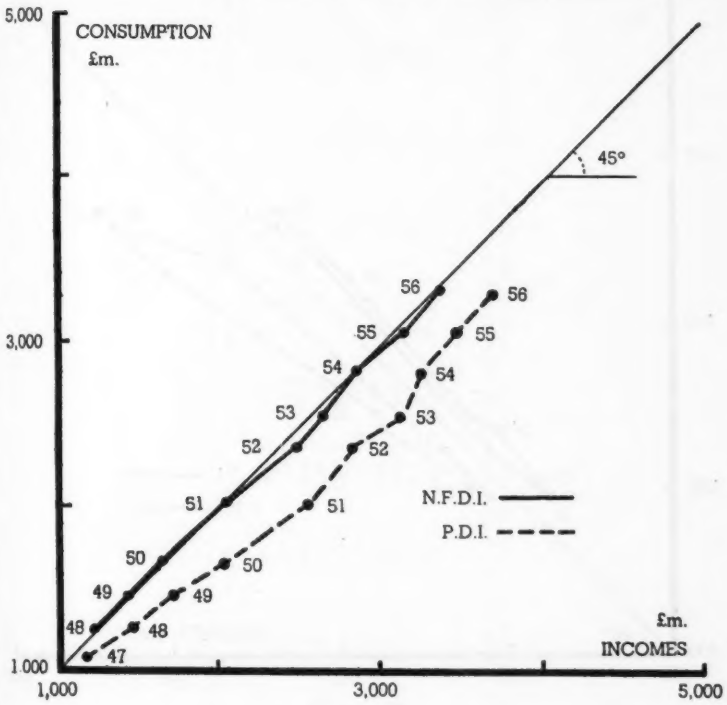

CHART I

The correlation of C with NFDI, though very good, is not perfect. As Chart I shows, consumption was relatively high in 1946/7, 1947/8 and 1948/9 and relatively low in 1951/2 and 1952/3. On the principle of econometric gamesmanship that one improves the fit of a curve by "explaining" the deviations,[3] one might point out that 1946/7, 1947/8 and 1948/9 were post-war years in which liquid asset holdings were still abnormally high, while the low figures for 1951/2 and 1952/3 might be accounted for on the hypothesis that Australian consumers

3. Cf. R. Dorfman, "The Nature and Significance of Input-Output", *Review of Economics and Statistics*, May 1954, p. 129.

as a group spend less, out of a given income, if their income is falling than if it is rising.[4]

(c) The hypothesis that consumption in Australia is a function of non-farm disposable incomes fits the data for the pre-war decade (1928/9-1937/8) as well as for the post-war decade (Table II, Chart II). But the result is less impressive because, for the 'thirties, the conventional consumption function also works well. (The correlation

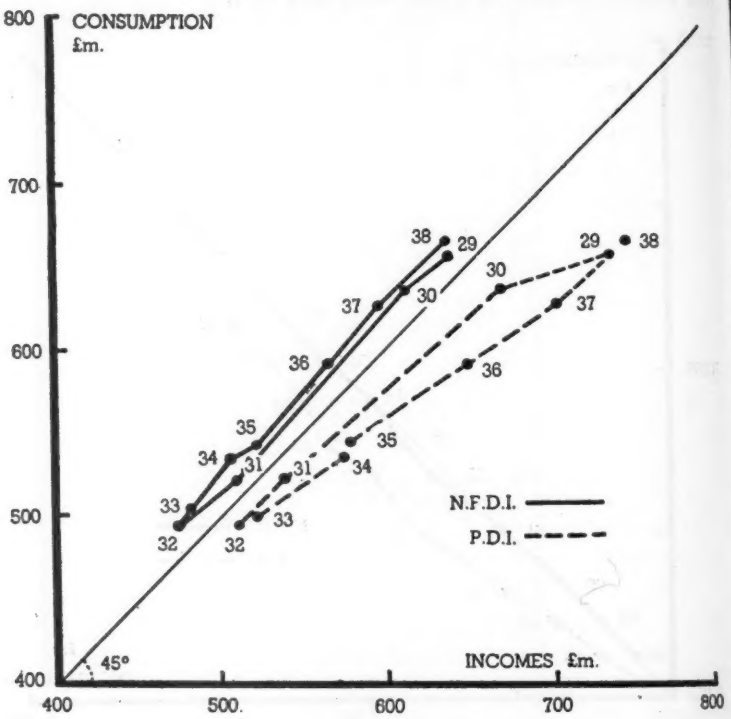

CHART II

coefficients, even for the relation between year-to-year changes, are almost identical: 0·99 for changes in C on changes in NFDI; 0·97 for changes in C on changes in PDI.) The approximate post-war equality C = NFDI, however, does not hold for the pre-war decade, as the regression line of consumption on non-farm disposable income

$$C = 0{\cdot}8 + 1{\cdot}0473 \text{ (NFDI)}$$

4. Such a hypothesis also fits the low *real* consumption levels of 1929/30 and 1930/1 (Chart III). It is only fair to add, however, that the observations for 1951/2, 1929/30 and 1930/1 might also be explained by the hypothesis that the income of farmers *does* exercise some influence on farm consumption—for farm incomes were falling in these years relatively to other incomes.

TABLE II

£m.	1928–9	1929–30	1930–1	1931–2	1932–3	1933–4	1934–5	1935–6	1936–7	1937–8
1. Personal income	748	681	557	531	542	593	600	670	725	768
2. Personal iucome tax	12	12	19	21	22	20	20	22	23	24
3. Personal disposable income ..	736	669	538	510	520	573	580	648	702	744
4. Income of farmers	99	60	30	40	45	70	60	85	111	107
5. Non-farm incomes	649	621	527	491	497	523	540	585	614	661
6. Personal non-farm income tax ..	10	11	18	19	20	18	18	19	19	21
7. Non-farm disposable income ..	639	610	509	472	477	505	522	566	595	640
8. Personal consumption	657	636	522	494	500	534	544	591	627	666
C ÷ PDI	·893	·951	·970	·969	·962	·932	·938	·912	·893	·895
C ÷ NFDI	1·028	1·043	1·026	1·047	1·048	1·057	1·042	1·044	1·054	1·041

Personal incomes are from H. P. Brown in *E.R.* 1949, and personal consumption is from an MS. by H. P. Brown. Income of farmers is obtained by using % figures in H. P. Brown *E.R.* 1949 for farm income. Personal income tax is obtained from an analysis of Government accounts. Refer also to footnote 1.

shows. The ratio of consumption to non-farm disposable incomes was stable at about 1·05 rather than unity, suggesting that the function has since shifted downwards (or is curvilinear).

(d) In order to explore this apparent downward shift further, it is necessary to convert the C = c (NFDI) function into real terms, since the slope of the function in money terms will have been distorted by the post-war inflation. Chart III shows the relation between consumption and non-farm disposable incomes, both deflated by the C-

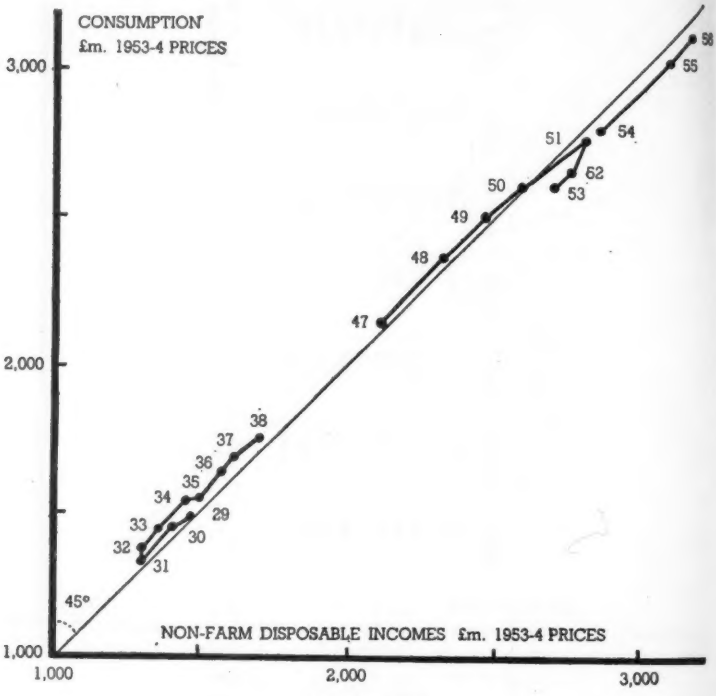

CHART III

series index. (There is no need to enter here upon the merits and demerits of alternative deflators; almost any alternative deflator available will give a rather lower marginal propensity to consume since other indices, such as the wholesale price index, have risen more sharply than the C-series in the post-war period.) The pre-war decade gives a regression line of

$$C = -40{\cdot}8 + 1.071\ (NFDI).$$

The post-war period gives a regression line of

$$C = 288{\cdot}2 + 0{\cdot}8875\ (NFDI).$$

By comparison, the regression line for the twenty years is

$$C = 160{\cdot}8 + 0{\cdot}9342\ (NFDI).^{5}$$

These relations support the suggestion that the consumption function has shifted downward, a shift for which post-war pressures towards voluntary and involuntary personal saving may be the explanation.

(e) Of what practical use is an Australian consumption function of the form $C = a + c\ (NFDI)$ (or, more boldly, $C = NFDI$)? Consumption has hitherto proved one of the most precarious components of market demand to forecast from year to year. The hypothesis here put forward does not solve the problem. But if confirmed it would mean that, given an independent estimate of market supplies, and of gross private investment, government expenditure and exports, the large residual component of consumption (small errors in the forecast of which make a great deal of difference to the result) can be fairly accurately forecast provided we have a reasonable idea of non-farm incomes (from our estimate of domestic full employment output and wages rates) and of income tax on these non-farm incomes.

H. W. Arndt
Burgess Cameron.

5. The correlation coefficients for these three regression lines (*not* first differences) are 0·9952, 0·9926 and 0·9988 respectively.

NEWS AND NOTES

In the last year or so we have been very much pressed for space, and our issues have become embarrassingly large. In future, therefore, we shall publish three issues of *The Economic Record* a year, and each issue should be rather smaller than in the recent past.

A permanent organization of agricultural economists, the Australian Agricultural Economics Society, was formed in Sydney in February 1957. Office-bearers for 1957 are:

President: Professor K. O. Campbell.

Vice-President: Dr. D. B. Williams.

Hon. Secretary: C. P. Dowsett.

Hon. Treasurer: F. H. Gruen.

Councillors: I. A. Butler (New South Wales), R. B. McMillan (Victoria), C. H. P. Defries (Queensland), F. G. Jarrett (South Australia), H. P. Schapper (Western Australia), I. G. Inglis (Tasmania), D. R. Munro (A.C.T.).

Further information concerning membership, objects and activities of the Society may be obtained from the Hon. Secretary, C. P. Dowsett, Rural Bank of N.S.W., Martin Place, Sydney.

The Melbourne University Press is anxious to obtain copies of issue No. 62 of *The Economic Record* (May 1956), for which it is offering 15/- each.

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Victoria: D. M. Hocking, Department of Economics, University of Melbourne, Carlton, Vic.

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REVIEWS

The Australian Wheat-Growing Industry, 1788-1948. By EDGARS DUNSDORFS. (Melbourne University Press, Melbourne, 1956.) Pp. xi + 547. 55/6 Aust.

This encyclopaedic work falls into two distinct parts. The first is an economic history of the wheat industry from the First Settlement to the early post-war period. The second comprises four detailed inquiries into particular aspects of the industry—trends in production and yields, costs of production, the place of the industry in the national economy and its demographic structure.

The book is a monument to the indefatigable and painstaking efforts of the author, but this is, at the same time, the genesis of its major weakness. Dunsdorfs does not appear to have developed any standards of selectivity. Any item remotely connected with the economic side of the wheat industry finds a place somewhere in the book's 550 pages. With this weakness must be coupled the author's tendency to push statistical analyses far beyond the point of diminishing returns.

In the historical section of the work, Dr. Dunsdorfs has distinguished six major epochs, each of which is studied in turn. When he reaches the period when more comprehensive production statistics become available, Dunsdorfs increasingly employs statistical tests as an aid to analysis. For instance, the widely-held view that the declining wheat yield in the latter half of the nineteenth century was due to the extension of wheat growing into lower rainfall areas is rejected by the author on the basis of such tests. In this same period, Dunsdorfs has made a heroic attempt to correlate movements in the wheat yield with the trade cycle, using the crude marriage rate as a trade cycle index. But he claims too much for his statistical analysis. The reviewer cannot agree that the author has established in the case of South Australia that the yield of wheat was the "single dominant cause influencing the trade cycle" (p. 185).

In the period of rapid expansion of the industry (1896-1930), Dunsdorfs proceeds to assess the relative influence of the new practices such as fallowing and manuring upon the wheat yield, using figures for regional aggregates. Since these practices, particularly fertilizing, are not discrete farm operations, it is difficult to see that these regression analyses have the incisiveness the author claims for them. Dunsdorfs also asserts that the breeding of drought-resistant varieties was not responsible for the shifting of the wheat belt into drier areas. In the discussion of these topics, the author shows a distressing tendency to give equal weight to opinions of writers, no matter how insubstantial or how authoritative they may be. Thus, there is much ado about the parentage of Bobs, the wheat variety first released by Farrer, when any modern geneticist would be prepared to assert that this was not the product of an intergeneric cross between wheat and barley. The author's tentativeness in making factual judgments is surprisingly

matched with a faith in historical determinism, which leads him to offer, on the basis of innumerable regression analyses, programmes for the future. These include advice to agronomists as to the aspects of wheat improvement they should concentrate upon. The reviewer submits that a rather different set of criteria is needed in guiding these research activities.

In the period after 1930, the various forms of governmental intervention are fully described but, with the exception of the home consumption price and the reconstruction of marginal lands, much-needed serious evaluation of the measures is not undertaken. The author explains: "Because of lack of historical perspective, it is not yet possible to evaluate the effect of the internal governmental policy and of the international wheat agreements on the industry" (p. 334).

Generally speaking, Part II of the book will be of interest to a more restricted group of students than will Part I. However, Dunsdorfs does provide a very interesting demonstration of the dual reaction of wheatgrowers, whereby they appear to increase sowings as a result of a price fall as well as a price rise. Dunsdorfs' attempted theoretical explanation here, as in other places, is very inadequate. In view of the recent study of Farnsworth and Jones (*Economic Journal*, June 1956), explaining the Canadian counterpart of this phenomenon in terms of the price relations of competing enterprises, it is significant that, in the Australian case, "up to 1948 no lasting connection between this factor [i.e. the relationship of wheat prices and wool prices] and fluctuations of the area under wheat could be established" (p. 366).

In Chapter II of Part II on the cost of producing wheat, the author makes an ingenious attempt to estimate the cost of production of wheat for the period 1914-15 to 1940-1 using aggregate data. In the process of derivation of the estimates, the previous work (based on sample data) done by the 1934 Royal Commission and the 1946 Simpson Commission is submitted to searching and critical examination. The results of this examination do not inspire confidence in either commissions or committees. Dunsdorfs' own estimates are remarkable in the light of the paucity of the data with which he had to work, but, at the same time, his efforts are a telling indictment of the often unnecessary secretiveness and mysticism frequently associated with analysis of cost data collected under governmental auspices.

Dunsdorfs' actual results indicate that in only five years between 1915 and 1941 did returns from wheat cover costs (including interest on the farmers' equity) and leave a profit from which managerial remuneration could be met. This suggests that the author's estimates are on the high side, though he attempts to show that they are not. Like so many Australian writers, Dunsdorfs regards the problem of production-cost estimation as being exclusively one of technique. The reviewer, on the other hand, holds that cost estimates derived by traditional accounting techniques are meaningless in a mixed farm context, and no amount of manipulation can make them otherwise.

The wheat industry, as a separate production entity, does not exist in Australia. Wheat growing is indissolubly integrated with pastoral

activities. The Simpson Committee found only one specialized wheat farm in Australia in the course of its entire investigations. To talk therefore, as the author does, of employment in the wheat industry (apart from seasonal labour) is nonsense. Much the same criticism applies to the land and capital employed. It is equally meaningless to talk of the adequacy of the wheat component of farmers' incomes, of wheat-farmers' indebtedness, or of the demographic characteristics of an entity which is only a figment of the statistician's imagination. If Dunsdorfs had carried out his work on income, debt and population changes on a regional basis instead of the present fictitious industry basis, the results would have been extremely valuable.

The actual presentation of the work leaves much to be desired. It is amazing that in a book of this size and character no attempt has been made to number the tables or the graphs. The result is that the reader is constantly trying to relate text to table and vice versa. There are graphs to which there is no textual reference and even graphs with descriptive titles four pages removed. In addition to a large number of typographical errors (including, in one place, the author's own name!), there are several misspelt place-names.

In summary, this book gives clear evidence of a tremendous amount of concentrated research on the part of the author. It is a pity therefore that so much of the work reported in Part II was misdirected. Greater economy of expression and the relegation of the more detailed statistical discussions to the appendices would undoubtedly have meant a greatly increased reading public for the book.

KEITH O. CAMPBELL

University of Sydney.

British Industry 1700-1950. By W. HOFFMANN. Translated by W. O. HENDERSON and W. H. CHALONER. (Blackwell, Oxford, 1955.) Pp. 338 + xxiii. 35/- stg.

It is a measure of the importance of the British economy that so many valuable contributions to British economic history should have been made by foreigners. Some surprise is, however, justified that two of the most significant have been made not only by Germans but by Germans under the Nazi régime. It is one of the minor contradictions of the second world war that there was published in 1940, at Jena, *Wachstum und Wachstumsformen der englischen Industriewirtschaft von 1700 bis zur Gegenwart.* This was the first edition of the work which now appears in English translation as Hoffmann's *British Industry 1700-1950.* This translation by Henderson and Chaloner matches their other venture, that of the production of Werner Schlote's *British Overseas Trade from 1700 to the 1930's.*

The translation of *British Industry* has done more than permit English readers access to a basic work not widely known outside Europe. It has also given Hoffmann the opportunity to extend his series from 1935 to 1950. The book is primarily designed to present the results of a massive statistical project to measure the rate of British

industrial growth over the past 250 years. The first part of the book offers the index of the trend of industrial output, calculated on a large number of commodities, based on weighted averages of output of particular commodities. This is followed by indices of output for particular industries, in the measurement of which some basic techniques have been developed.

These, the main sections of the book, are followed by attempts to correlate indices of separate industries and, in the final part, to suggest some of the general conclusions of the statistical work. Although we may raise doubts about some statistical methods, especially his weighting, or argue about the interpretation of qualitative information to fill in statistical gaps, we have what will serve for a long time as the standard measure of British industrial growth. It is, indeed, a refreshing experience to have this level of statistical scholarship after less rigorous British historical studies in other aspects of the economy, especially in prices and wages.

Hoffmann's historical conclusions, though deliberately limited, raise or re-emphasize some important questions for economic theorists and historians. The shape of the growth curve, following the form of a logarithmic parabola, is thoroughly established in Hoffmann's study and should form a major historical and theoretical problem for explanation. Divided into their separate segments, a detailed explanation of phases of rapidly rising rates of growth, slackening rates of growth, and, finally, falling rates of growth, is central to an understanding of the Industrial Revolution. Similarly, the contrasting experience of differing rates of growth as between producer and consumer goods production should arouse the interest of theorists and historians alike.

Some pedagogically convenient results emerge. It is a fortunate accident that swings in rates of growth of English patent registrations fit very well the periods of qualitatively important technological change. Again, the connection between Hoffmann's trend of industrial output per head and Tucker's real wage series on the one hand and movements in British profit incomes on the other is remarkably good. As with all important books, Hoffmann's study has produced a set of major problems which, it is hoped, British economic historians will now take up.

N. G. Butlin

Australian National University.

Population Growth and Levels of Consumption. By Horace Belshaw. (George Allen and Unwin, London, 1956.) Pp. xxix + 223. 25/- stg.

Excessive specialization is an often-deplored feature of modern scientific work. There is the story of the scholar who set out to write a history of mankind, but when settling down to the job he found he had to narrow down the field a bit, and he finished up by writing a history of the Jews in the Grand Duchy of Luxemburg!

Professor Belshaw does not fall into this type of error. His book joins the ranks of the literature dealing with the wide and important

problem of economic growth and development. Moreover, it is one of the books which recognize the desirability of treating the subject from various angles: those of the demographer, economist, statistician, sociologist and others. An outstanding example of such a combination of approaches is provided by Professor Lewis's *Theory of Economic Growth*, and indeed the two books have much in common, though the present volume is dealing less with general theory and more with the concrete example of Asian countries. Such combinations lead to fascinating problems, and the marriage of demography and economics, which is based on the realization that the two sciences need each other for their full development, is likely to be a particularly happy and fruitful one.

Apart from an introduction and a concluding Part III in which the main results are summarized and some implications examined, the main body of the book is divided into two parts of very unequal length. Part I, the shorter one of the two, gives a lucid account of the demographic position in the various Asian countries; Part II, which forms the central feature of the book, examines the various factors which may contribute to a rise in consumption standards and a solution of the population problem in these areas. The efficacy of these factors, such as investment and innovation, is studied in their institutional setting; and indeed this part of the analysis is perhaps the one that makes the most valuable contribution to our knowledge.

Attention is rightly drawn in the book to the importance of the Cobb-Douglas production function in the problems associated with economic development, in particular regarding the relative weights which attach to capital investment and innovation. This is an exceedingly intricate problem that has not yet been solved, since the interpretation of the results derived from econometric studies is open to considerable doubt. An examination of these statistical problems would perhaps be out of place in the framework of this book, but the numerical results obtained in the original Cobb-Douglas studies have perhaps been too readily accepted without an investigation of their implications on capital-output ratios and other more recent empirical results.

There are some minor inaccuracies in the presentation of the production function in its extended form which takes account of innovations. There is a misprint in the formula given on page 91, whilst the formula is correctly given on page 59. But on this page, the explanation of the symbols is misleading: it is not the exponent a which varies over time, but the factor e^{at}; similarly the statement that the innovations "affect the exponents of labour and capital" is at least ambiguous.

These matters, however, are not the kind of things the ordinary reader will take offence at, and they do not detract from the merits of the book, which provides an easily readable introduction to many theoretical and practical problems associated with economic development. A large number of footnotes in the text, together with a combined author and subject index at the end, help to find references for further study.

C. E. V. LESER

Canberra University College.

Capital Formation and Foreign Investment in Underdeveloped Countries. By CHARLES WOLF, JNR., and SIDNEY C. SUFRIN. (Syracuse University Press, Syracuse, N.Y., 1955.) Pp. viii + 134. $3.

To the student of underdeveloped countries it must seem that theoretical considerations often receive insufficient attention in development programmes. The plain fact is that traditional economic theories are not always applicable to underdeveloped areas and that in far too many cases not enough is known about the nature of the problem to allow the best action to be taken.

In an attempt to correct this situation in relation to the problem of capital formation, mainly in the underdeveloped areas of South and South-East Asia and the Near East, the authors, with the financial and administrative aid of the Ford Foundation, collected information about current research projects in the U.S. and other countries by questionnaire and by interviews, and studied over 400 books, periodicals, etc., published or written since 1949. Their findings and analysis comprise about half the book. The rest is given over to a carefully selected and assembled list of material consulted and recent and current research (mainly at Indian and U.S. universities), each item of the list being briefly described but not critically assessed; the text of the questionnaire is appended.

The authors make three main observations. The first is that the indigenous population of underdeveloped areas must be imbued with the spirit of the entrepreneur (at the public or private level, or both) so that a link between available resources and investment opportunities is thereby established. The second is that priorities must be determined to ensure that any capital available is invested in the best way. And thirdly, the role of foreign investment (which at times becomes synonymous with U.S. investment) as a "trigger" for indigenous capital formation is discussed. It is in these fields that the authors feel that more could be done and they offer recommendations in respect both of possible programme actions and of further research.

The authors have packed a lot into their 70-odd pages of text; and there is scarcely a page without footnotes further elaborating a point or inviting reference to the work of other authors. One can only regret that they could not have been more expansive. Certainly because of the space limitations they have placed upon themselves they can hardly be criticized for not dealing more fully with some of the points they raise. One cannot help feeling, however, that greatly increased capital formation through indigenous entrepreneurship may only be achieved in the very long run. There are many sociological obstacles (some of which indeed they recognize) which are extremely difficult to overcome peaceably in a short time. Another suggestion, that the dynamism of nationalism might be harnessed and redirected towards internal capital formation, omits to observe the inherent danger of nationalist movements which are often associated with an educated *élite* in a position to mislead the masses into politically explosive situations; while religious missions and the importance of their influence in some underdeveloped areas have been ignored.

These and similar points, however, do not discount the value of the book as an important contribution to a firmer basis of co-operation between researchers and planners.

It appears that no Australian university was sent a questionnaire, perhaps for the very good reason that none of our universities is conducting major research into the problems of underdeveloped countries.

DON MCKENNA

Sydney.

Work and Authority in Industry: Ideologies of Management in the Course of Industrialisation. By REINHARD BENDIX. (John Wiley & Sons, New York, 1956.) Pp. xxv + 466. $7.50.

This is the first of a broad series of studies of the evolution of labour-management relations in widely differing social and economic settings, being carried out at five American universities. Bendix, a sociologist at the Institute of Industrial Relations at the University of California at Berkeley, has analysed the development of entrepreneurial ideologies in four case-studies: England in the process of industrialization, modern America, Russia under the Tsars, and the East Zone of Germany since World War II. Viewing the subordination of the individual to the demands of the enterprise as a basic problem for society, he shows how the managers' formulation of the problem reflects their social environment while at the same time helping to transform it. In general he finds that industrialization tends towards the development of bureaucracy, and a growing recognition that the problem of human organization in industry is essentially a matter of understanding industrial enterprises as socio-technical systems with a logic of their own. In such systems, managers seek to legitimize their authority through their role in understanding the system and in making it work, rather than through their social origin or their personal qualities.

This stimulating book puts modern personnel management in a clearer social perspective and provides a deeper insight into the nature of a fundamental economic institution of modern society. It also has much to offer to those concerned with development of the "underdeveloped" countries, for their industrialization must raise the same basic issues of human values and social ideology.

K. F. WALKER

University of Western Australia.

Limited Liability Companies in Australia. Some Aspects of Control. By R. KEITH YORSTON. (The Law Book Co. of Australasia, Sydney, 1956.) Pp. xi + 193. 42/- Aust.

The theory of the firm emphasises the prices and outputs of particular goods and services and the distribution of the national income. Location of power, capital structure and many other aspects of business behaviour are not subjected to detailed study. Critics suggest that the

theory should take account of all these variables, explore the motives underlying business behaviour, and, above all, be more empirical. Yorston's volume, based on a series of lectures sponsored by the Australian Society of Accountants and described by the author as "a study of the development, control and management of limited liability companies in Australia, including an outline of the functions of a board of directors", contributes to this borderland of the theory of the firm.

Growth in size of the individual firm has increased its social importance and brought a considerable dispersion of the ownership. Control by owners is being delegated to "professional and trained managers" (p. 38). This discussion is supported by summaries of American surveys and Yorston's questionnaires eliciting information on directors' shareholdings, composition of boards of directors, additional information to be included in company reports, and employee attitudes towards company accounts; one is disappointed that the author's requests "to several trade unions for an official expression of opinion proved abortive" (p. 32). Chapter 10 presents case-studies of control methods. Chapter 11 on "The Economics of Australian Company Finance" is a handy compilation of statistics from official sources and the work of McGee, Keown, and Hall. Appendices deal with Australian company statutes, company shareholdings, and annual company registrations, 1859-1955.

Yorston's empiricism is commendable—some of the surveys have not previously been made in Australia—but some points are open to question. Smaller average shareholdings reflect diversification of shareholdings as well as a greater number of shareholders in the community. Cross-classification of data on directors might have revealed some interesting differences. Do holdings of "inside" and "outside" directors differ in size? Are the "inside" directors more closely associated with important shareholder interests than the "outside" directors? How important are the "undisclosed" shareholdings of directors? The significance of inter-company shareholdings is not discussed.

The volume presents a variant of the "managerial revolution" thesis and, like the original, over-simplifies. Control structures in firms are multifarious: there may even be rival centres or separate centres for different purposes. That control centres may conflict is apparent from recent disputes within some Australian companies. Yorston's discussion has not shown how to locate these centres, nor has recent research by economists, psychologists, political scientists and sociologists. The style of the work is staccato; Chapters 8 and 9 on public relations aspects might have been offered as a separate part; there are some oddities of expression—"map of the geological distribution of shareholders" (p. 22). But it should be read by accountants, directors, and investors. The teacher of economics will find in it material that lends realism to discussion of the firm. The research worker in Australian business finance will find suggestions for further study.

D. LAMBERTON

University of New England.

An Expenditure Tax. By NICHOLAS KALDOR. (George Allen & Unwin, London, 1955.) Pp. 249. 18/- stg.

In principle there is nothing new in a tax upon expenditure.[1] Fiscal systems have for hundreds of years incorporated taxes which have relied for their yield on expenditure. However, to date no fiscal system has adopted an expenditure tax as an annual progressive tax for general use. This is not to say that it has not been seriously considered. The case for taxing people on what they consume rather than what they earn was succinctly stated by Hobbes 300 years ago. Since then the proposal has been considered by a number of writers but in the main dismissed as an administrative impossibility.

Mr. Nicholas Kaldor has restated the case for an expenditure tax. He was a member of the United Kingdom Royal Commission on the Taxation of Profits and Income, but as consideration of an expenditure tax was ruled to be outside the terms of reference of the Commission, he has pursued the matter independently in this book.

Under Kaldor's tax, taxpayers would be assessed to tax each year, not on the basis of their income but on their total spendings. Thus the proposal would have the effect of exempting savings and of taxing dissaving. Any proposal which would give an incentive to increased saving must at the present time merit close consideration. It would also incidentally remove much of the importance attaching to the argument that an income tax results in a form of "double taxation" of savings.

Another advantage claimed for the proposal is that persons would be taxed on expenditure out of capital. This may be an important source of consumption expenditure in the United Kingdom, but there is no direct evidence that it has assumed significant proportions in Australia.

In practice Kaldor suggests that the taxpayer would not be required to prepare an itemized statement of his expenditure during the year, but instead would calculate his expenditure indirectly. To the bank balances and cash on hand at the beginning of the year would be added income such as wages, dividends, business drawings, etc., proceeds from the sale of assets, and money borrowed. From this would be deducted non-consumption expenditure such as purchases of investments, gifts, and bank balances and cash on hand at the end of the year. The difference between the two amounts would represent gross expenditure. Certain adjustments are proposed to gross expenditure to arrive at Chargeable Expenditure, which is the amount upon which the tax is levied.

The adjustments proposed relate to "exempted" expenditure and consumers' "capital" expenditure. The following might be regarded as "exempted" expenditure:

(a) personal expenditure where there is a genuine adverse interest involved (e.g. alimony payments);

1. The present review considers Mr. Kaldor's proposals primarily from the point of view of an administrator. It was intended to publish a second review by an academic economist, but the academic mill is still grinding.

(b) payments in support of aged or incapacitated relatives;
(c) charities, provided a limitation were placed on the total amount;
(d) emergency expenditure (e.g. through illness, accident, burglary or theft).

The problem of consumers' "capital" expenditure is more vexed. For houses Kaldor suggests exempting the capital expenditure but substituting a notional annual value which would be subject to tax. Other capital expenditure on durable consumers' goods might be spread over five years at the taxpayers' option. Capital expenditure on jewellery, pictures and similar valuables would be exempted but 5 per cent of the value would be taxed in subsequent years.

Family responsibilities would be catered for by taxing on the basis of expenditure per head with children counting as, perhaps, a half unit.

To curtail evasions, Kaldor suggests that gifts and transfers of property *inter vivos* should be disallowed and be treated as sales by the donors and income accruing to the recipients.

Kaldor does not minimize the administrative problems arising from an expenditure tax. To his mind, the advantages of the system outweigh the administrative problems. As a start, however, he suggests that the expenditure tax be imposed in lieu of surtax, which in the United Kingdom applies to income in excess of £2,000. Surtax is paid by only about 300,000 of the 15,000,000 taxpayers in that country.

In Australia there is no such convenient dividing line. An expenditure tax would on the face of it have to replace completely the present income tax structure, unless some arbitrary division of the field were made.

Whether or not the expenditure tax applied to all or only a special group of taxpayers, there would be many administrative problems. For instance, returns would undoubtedly be more complex. At present the returns of income for wage earners (who constitute about 70 per cent of the total number of taxpayers) are comparatively straightforward. Under an expenditure tax a considerable amount of additional information would be required. This would not only complicate the preparation of returns for taxpayers but would also add a considerable burden to the work of the collecting authority in the assessment of the returns. As a solution to this problem of assessment, Kaldor suggests that the American system of self-reporting might be adopted. Under this system only a small proportion of cases are scrutinized in detail. To discourage false or incomplete reporting, heavy punishment and adverse publicity would be relied upon. Nevertheless, the additional burden of preparation of returns would rest upon the taxpayer. In practice, however, it might be necessary to exempt a large section of the population from the levy, since in the lower income brackets expenditure equals income. To this extent, therefore, the administrative burden might be less than would otherwise be the case.

In the early stages in particular, evasion of the tax would probably be common. It would be difficult to prevent anticipatory buying, hoard-

ing of cash and the transfer of funds to other members of the family who would then undertake the expenditure. At all times it would be difficult to trace the direct barter of goods, false valuation of assets and concealment of the sale of an asset.

Collection of the expenditure tax could well entail real difficulties. The larger the expenditure the larger the tax bill. However, the larger the expenditure the more difficult it would probably be to collect the amount owing by way of tax. It would of course be possible to continue a system of tax instalment deductions from salary and wages, based on an estimated level of expenditure for different income groups. So far as those taxpayers from whom too much was taken by instalments were concerned, there would be no hardship, as these taxpayers would be making savings from their income. The inducement to saving under the scheme would, however, be reduced as the effect of the excess tax deductions would not be apparent until the following year.

Where the tax deductions were insufficient to meet the expenditure tax (because the expenditure exceeded the average) collection of the outstanding money could well lead to difficulties for the tax-collecting authority.

On the face of it a system of provisional tax could be continued for taxpayers deriving income other than salary and wages. Where, however, the expenditure varied substantially from year to year, collection difficulties could well arise.

As regards rates of tax, Kaldor suggests that the rates should be "reasonably moderate" and "should bear adequate recognition both to the far-reaching implications of the change in the tax base and to social realities". After demonstrating that an expenditure tax based on 1954-5 surtax rates in the United Kingdom could produce incremental rates of 1,000 per cent, Kaldor suggests a scale of progression on the following lines:

Net Expenditure per Head		Marginal Rate
£	£	%
750–	1,000	25
1,000–	1,500	50
1,500–	2,000	75
2,000–	3,000	100
3,000–	5,000	200
5,000 and over		300

Adoption of these rates would mean that in addition to income tax a bachelor spending £2,000 a year would pay £687/10/- expenditure tax. A married man with two children (counted as three adults) would pay only £187/10/- on a family expenditure of £3,000.

The rates of an expenditure tax which would have to be imposed in Australia to raise the same amount as is now derived from income tax on individuals can only be a matter of speculation. The following table supplies an approximation based on arbitrary assumptions as to the percentage of actual income devoted to expenditure by taxpayers.

The basic statistics relate to 1953-4 incomes of taxpayers subject to income tax.[2]

Income Group	Total Income	Income Tax Assessed	Total Income after Tax	Assumed Expenditure of Income after Tax		Rate of Exp'ture Tax Necessary to Yield Present Income Tax Revenue
£ £	£m.	£m.	£m.	%	£m.	%
105– 500	295·5	10·0	285·5	100	285·5	3·4
501– 1,000	1413·2	87·1	1326·1	95	1260·0	6·9
1,001– 1,500	603·4	51·3	552·1	90	496·9	10·3
1,501– 2,000	172·5	21·9	150·6	85	128·0	17·1
2,001– 3,000	168·7	30·3	138·4	80	110·7	27·4
3,001– 5,000	153·8	39·4	114·4	75	85·8	46·0
5,001–10,000	112·7	42·6	70·1	70	49·0	87·0
10,001 and over	69·8	36·5	33·3	65	21·6	169·0
	2989·6	319·1	2670·5		2437·5	13·1

On these assumptions, the rate would exceed 100 per cent only in the higher income ranges. To the extent that the percentages of income after tax which are spent are greater or less than the assumed percentages, the rates would be accordingly lower or higher than those shown.

As to the practicability of an expenditure tax Kaldor writes: "A personal expenditure tax would undoubtedly be a more complicated tax to administer than the present type of income tax: it would make greater demands on the taxpayer in the preparation of the return as well as on the Revenue officials in checking it: in consequence it may never assume the role of the present income tax as a tax embracing two-thirds if not three-quarters of the whole working population of the country." Consequently, it does not seem possible to envisage this country ever adopting the levy as a complete substitute for income tax. But in certain conditions and in particular contexts it may prove that an expenditure tax would be a desirable tax in Australia for a limited group of taxpayers. Provided the case for the imposition of the expenditure tax was absolutely clear-cut, it is not unreasonable to assume that it would be practicable to administer provided the government of the day was prepared to regard the administrative burden as justifying the end.

D. STEELE CRAIK

Canberra.

Economic Theory and Method. By F. ZEUTHEN. (Longmans, Green, London, 1955.) Pp. xii + 364. 30/- stg.

Professor Zeuthen should be well known to British economists from his book, *Problems of Monopoly and Economic Warfare*, published in 1930. The work now under review is a translation of a revised and enlarged edition of a book of the same title which was originally published in Danish in 1942. Basically it is a widely-ranging review of modern economic theory, with emphasis on the methodological and

2. 1956-7 Budget Papers.

taxonomic aspects of the subject-matter. In some ways it resembles a *Survey of Contemporary Economics*, but enjoys the advantage of greater uniformity of viewpoint and presentation. Mrs. Zeuthen is to be congratulated on the elegance and clarity of her translation.

This is not a textbook for beginners. Professor Zeuthen presupposes a knowledge of economic theory at least equivalent to the third stage of an Australian undergraduate course in economics, and the book is likely to be particularly valuable for students proceeding to an honours degree. Many parts of it will be useful to university teachers, not merely as a source of excellent references to periodical literature, but particularly for the author's excellent summary and expansion of what by British readers is bound to be thought of as "Walrasian Economics". Chapters 11 to 13 (inclusive) are strongly recommended to anyone who needs to find out or wishes to teach students something about the relationship between the micro-economic notion of "interdependence" and the macro-economic notion of "circular flow". It should be observed, however, that later on (Chapter 31) Professor Zeuthen is not very enthusiastic about the "index-equations" which have to be used in aggregative models, and warns his readers against an "unconditional belief in three or four macro-economic equations as the image of economic god. . . ."

Another merit of the book is found throughout its chapters but explicitly in the first part. Unlike so many English-speaking economists, Professor Zeuthen believes that methodology deserves to be taken seriously. His standpoint appeals to the reviewer. Economic theories are to be regarded as hypotheses—as "drafts useful for later work", rather than as "infallible and unchangeable laws" (p. 6). As for mathematical models, their "main utility . . . is in many cases to give a simple and exact idea of a kind of interdependence which must be assumed to have an approximate validity, but which must be corrected at discretion. . . . A literal belief in and a direct application of the simple pictures as if they were real is foolhardy." In addition to the wisdom of Part I, Professor Zeuthen includes in Part III a good deal of useful material on ways of dealing with problems arising from the passage of time. Of course much of this discussion is not particularly novel, but many people will be glad to have it available in an accessible form.

The reviewer must confess himself a little disappointed by Part IV, which deals with "Forms of Market and the Structure of Society". This is Professor Zeuthen's own ground, and one had expected him to go further into analytical detail than he has in fact attempted to do. This part should have afforded him the opportunity to illustrate and develop explicitly the principles of economic method which he has asserted in Part I. Only in three chapters (50, 51 and 52, pp. 243-75) does he go at all deeply into the details of analysis, and in some respects his treatment of this important branch of economics is less satisfying than that of (for example) Professor Scitovsky in *Welfare and Competition*. It must also be pointed out that the publisher's claim on the dust-cover, that "the author offers a treatment of economic warfare

on the lines of the Neumann-Morgenstern logic of games", does not seem to be fully justified either by the contents of Chapters 57 and 58 or by the comparatively brief references to *The Theory of Games* on pp. 296-8. Notwithstanding the foregoing remarks, this part of the book is well worth reading if only for its critical comments on recent literature in the theory of the firm, and not least on the celebrated article by Messrs. Hall and Hitch (pp. 318-22). The two concluding chapters, entitled (respectively) "Property and Power" and "The Power of the State and the Structure of Society", include several courageous sorties into the frontier territories of economics.

G. G. FIRTH

University of Tasmania.

OTHER BOOKS*

The Terms of Trade. A European Case Study. By CHARLES P. KINDLEBERGER (with the assistance of HERMAN G. VAN DER TAK and JAROSLAV VANEK).

This important book is more than just a case study. It systematically tests, against statistical evidence for industrial Europe from 1870-1952, current views regarding the effects of commercial policy, exchange rates, investment, business cycles, demand, supply, development, etc., on the terms of trade. It contains many thought-provoking observations and generalizations. It is particularly frank about the limitations of the many statistics.—A. J. REITSMA.

Government Budgeting. By JESSE BURKHEAD.

This book applies economics and public administration to budgetary theory and practice with emphasis on organization and procedure. It is oriented towards the budgets of the U.S. governments, especially the federal government, but there are frequent references to budgetary practices and problems in other countries, and the discussion is sufficiently general to be valuable to students in other countries. There are extensive references to the literature of both economics and public administration.—W. R. LANE.

The Cost of the National Health Service in England and Wales. By BRIAN ABEL-SMITH and RICHARD M. TITMUSS.

This book is, substantially, the memorandum submitted by two research workers of the N.I.E.S.R. to the Guillebaud Committee which was appointed in 1953 to review the cost of the Health Service. The authors rejected the appropriation accounts as indicators of the cost of the Service and develop measures (e.g. quantity of resources employed and their alternative uses) which are economically more meaningful. This approach could profitably be studied by any committee considering the cost of a public service.—R. H. WALLACE.

* Further details of the books noticed here may be found in the "Books Received" lists in earlier issues of *The Economic Record*, usually the issue for November 1956.

Income and Wealth, Series V. Edited by SIMON KUZNETS.

This volume contains papers on long-term movements in national income and expenditure. Jefferys and Walters survey existing U.K. estimates (1870-1952) and present new estimates of component aggregates. Perroux gives estimates for France (1780-1950), Jostock for Germany (1860-1950), Bjerke for Denmark (1870-1952), Eckstein for Hungary (1900-50), and Yamada for Japan (1875-1942).—JAMES W. ROWE.

National Income Statistics: Sources and Methods. (Central Statistical Office.)

A lucid exposition in some detail of the sources and methods used in building up the official estimates of national income, expenditure and output, and the social accounts, of the United Kingdom, as published in the spring White Paper and the summer Blue Book. It serves, among other valuable uses, to throw light upon the difficulty of comparing the British tables, and the terms used in them, with those in the official publications of Australia and New Zealand.—F. R. E. MAULDON.

Public Control of Economic Enterprise. By HAROLD KOONTZ and RICHARD W. GABLE.

The authors have set themselves the ambitious task of reviewing the problems which have led to public control of the American economy, the forms of these controls and a critical appraisal of the achievements of all this legislative effort. The treatment is lucid, detailed and well documented. Controls in the following sectors of economic activity are discussed: transport, public utilities, maintenance of competition, financial investment, employment conditions, aids to business and agriculture, and controls to secure stability and growth in war and peace.—R. R. HIRST.

Fluid Milk Marketing. By GEORGE MAX BEAL and HENRY H. BAKKEN.

This book traces the economic evolution of the dairy industry in the United States from the first importations of cattle to the present time. It describes and analyses the entire process of marketing fluid milk in its movement from the farm to the consumer. Particular emphasis is given to the problems of pricing milk.—A. G. WHITLAM.

Plant Location in Theory and Practise. By MELVIN L. GREENHUT.

This work is in four parts. In Part One the author examines the principal theories of location and reconciles their underlying themes. In Part Two the specific factors affecting location are examined in detail. Part Three consists of case studies which illustrate the principles discussed in earlier chapters; and Part Four is both a summary and an attempt to provide a general theory of plant location.—D. M. HOCKING.

Dynamic Factors in Industrial Productivity. By SEYMOUR MELMAN.

This book is an inquiry into the long-run determinants of man-hour productivity. Three hypotheses are put forward and tested. (1) The degree of mechanization is controlled by the relative costs of labour and machines. (2) Labour productivity is governed by the degree of mechanization. (3) The growth of administrative overhead has limited the effect of rising productivity on output per person.—J. McB. GRANT.

The Challenge of Automation. Papers delivered at the National Conference on Automation.

Automation. A New Dimension to Old Problems. By G. P. SHULTZ and G. B. BALDWIN.

The Economic Consequences of Automation. By PAUL EINZIG.

The first publication consists of eleven, often brief, "popular" addresses on automation. The most useful paper is by W. Buckingham. There are also some interesting indications of the American trade union point of view.

The second is an excellent paper containing in a useful summary form a discussion of the developments coming under the name of automation, the technical changes upon which it depends, the extent to which it is another "revolution", the factors determining the spread of the new techniques, and the problems that may arise.

Einzig complains that economists hold automation "presents no problems which are not covered already by the existing body of economic principles", but his own approach strongly suggests it is "a new dimension to old problems". Though the book is wordy, not well arranged and abounds with value judgments, it is a useful indication of the sort of problems involved.—JAMES P. BELSHAW.

Trade Union Government and Administration in Great Britain. By B. C. ROBERTS.

In successive sections this book deals with the law relating to the internal affairs of trade unions in the United Kingdom; types of union governmental structure; the process of electing union officials; the role of the full-time official; union finances; and, finally, federal organizations of British unions and the Trades Union Congress.—R. M. MARTIN.

The Economics of Employment and Unemployment. By PAUL H. CASSELMAN.

The object of this book is to outline current explanations of each of the main types of unemployment and to indicate some of the policy and other measures which are available to deal with them. While the emphasis is chiefly on general and seasonal unemployment, most of the other well-recognized types of unemployment (e.g. technological, structural and casual) are also treated. In addition there is some discussion—a little off the main track—on alternative definitions of "full

employment'' and on methods of making employment forecasts.—A. HAGGER.

A Revision of Demand Theory. By J. R. HICKS.

The foundations of this revised theory of demand are laid with a discussion of the logic of strong and weak ordering. Laws of demand are then derived from the conditions of two-term consistency and transitivity. These laws, including the integrability condition, are derived by geometrical arguments the understanding of which requires virtually no knowledge of mathematics.—A. R. BERGSTROM.

Adam Smith and the Scotland of His Day. By C. R. FAY.

In this delightful book the old master distils a scholarly life-time's acquaintance with Adam Smith and his friends, and with the eighteenth century. The best of Fay is here: the grand generalizations, the odd and illuminating juxtapositions, the extraordinary unique detail fished up from the well of memory, the sudden chuckle at the end of a chapter, and the solid scholarship controlling the flow of anecdote and allusion. To read this book is to realize that the study of economic history and political economy could be a liberal education.—J. A. LA NAUZE.

The Psychology of Economics. By W. A. WEISSKOPF.

This is an attempt to interpret the development of economic thought in the light of modern social psychology and psycho-analysis. It deals mainly with Adam Smith, Ricardo, Malthus, Marx and Engels, and Alfred Marshall.—G. S. L. TUCKER.

How Can Europe Survive? By HANS F. SENNHOLZ.

This book contains a political and economic analysis of schemes for European integration and unification. The author examines both theories of unification current in the 'thirties and post-war attempts at European integration (e.g. the Economic Commission for Europe). The basis of his reasoning is the criterion of *laissez faire*, and liberty is equated with perfect competition. He concludes that none of the schemes will succeed, because they allow member governments to control the movement of capital, labour and products.—NEVILLE CREW.

Economic Commentaries. By SIR DENNIS ROBERTSON.

This is a collection of articles and addresses composed in the years 1952-5. Written in an excellent and, in parts, very amusing style, they cover, inter alia, a discussion on the state of debate in value theory, utility theory, the rate of interest, the sterling problem, post-war inflation, and the role of persuasion in economic affairs.—J. G. PRIDE.

The Essentials of Economics. By D. C. HAGUE and A. W. STONIER.

This book follows *A Textbook of Economic Theory* by the same authors, but its aim is to explain the main generalizations of present-

day economics in simple language. The result is interesting and stimulating, but it is not in fact easy for beginners to read. It is rather a book which those who already have a good deal of knowledge may occasionally use with profit to remind themselves of the quintessence of economics.

Comparative Economic Development. By RALPH H. BLODGETT and DONALD L. KEMMERER.

This textbook for elementary students is divided into four equal parts—the United States (capitalism), Great Britain (the welfare state, or "decadent capitalism"), Soviet Russia (totalitarian socialism) and pre-war Germany (fascism). Starting with population and resources the authors then discuss the development of agriculture, industry, commerce and labour institutions in each country. Comparison of the four economic systems is confined to the last nine pages.—MALCOLM HILL.

Population and Planned Parenthood in India. By S. CHANDRASEKHAR.

Much of this book was first written as a presidential address, and it is gracefully written rather than profound. A valuable feature, however, is the statistical appendices which summarize the 1951 Indian census. Dr. Chandrasekhar shows that in India there is widespread desire for effective methods of birth control and no serious religious or moral hindrances to its spread. His book suggests that controlled fertility may be nearer than Westerners often assume.

BOOKS RECEIVED*

A.—AUSTRALIAN AND NEW ZEALAND PUBLICATIONS

DEPARTMENT OF NATIONAL DEVELOPMENT. *Conservation of Surface Water; Power and Fuel; Distribution of Stock; Vegetation Regions; Drainage Systems. (Atlas of Australian Resources.)* Five maps with commentaries. (Canberra, August 1955 to February 1956.) No price stated.

DOWNING, R. I. *Raising Age Pensions. A Five-Point Programme.* (Melbourne University Press, 1957.) Pp. 22. 2/- Aust.

This pamphlet suggests that, if the Commonwealth Government is prepared to spend an extra £12m. on age pensions, it would be better, instead of using it to add 10/- a week to all pensions, to:

(i) add 7/6 a week to the pensions of all those who do not share their household expenses with another person—estimated cost £5m.;
(ii) offer special assistance to pensioners who can demonstrate need—£3·5m. would give an average of 10/- a week extra to one-third of the pensioner population;
(iii) pay housing-allowances to those who cannot get suitable accommodation at reasonable rents—£2·5m. would give an average of 10/- a week to each of the 100,000 pensioners estimated to be in this situation; and
(iv) spend an extra £1m. to subsidize state, local government and voluntary organizations in order to encourage a greatly expanded provision of communal facilities and domiciliary services for the aged.

It concludes with some suggestions for a long-term improvement of the position of the aged in the community.

HALL, A. R. *Australian Company Finance. Sources and Uses of Funds of Public Companies, 1946-1955.* (The Australian National University Social Science Monographs, 7.) (Australian National University, Canberra, 1956.) Pp. 198. 32/6 Aust.

SINCLAIR, W. A. *Economic Recovery in Victoria 1894-1899.* (The Australian National University Social Science Monographs, 8.) (Australian National University, Canberra, 1956.) Pp. 128. 25/- Aust.

B.—OTHER PUBLICATIONS

BAADE, FRITZ. *Welternährungswirtschaft. (Rowohlts deutsche Enzyklopädie.)* (Rowohlt, Hamburg, 1956.) Pp. 174. DM 1.90.

EISERMANN, DR. GOTTFRIED. *Die Grundlagen des Historismus in der deutschen Nationalökonomie.* (Ferdinand Enke, Stuttgart, 1956.) Pp. 249. DM 25.

GIGNOUX, C. J. *Histoire d'une Entreprise Française.* (Hachette, Paris, 1955.) Pp. 254. No price stated.

INTERNATIONAL ECONOMIC ASSOCIATION. *International Economic Papers.* No. 6. (Macmillan, London, 1956.) Pp. 211. 15/- stg.

KENDRICK, JOHN W. *Productivity Trends: Capital and Labor.* (National Bureau of Economic Research, New York, 1956.) Pp. 23. 50 c.

KULKARNI, K. R. *Agricultural Marketing in India (with Special Reference to Co-operative Marketing of Agricultural Produce in India).* Vol. I. 2nd edition. (The Co-operators' Book Depot, Bombay, 1956.) Pp. 501. Rs. 20.

LAUD, G. M. *Co-operative Banking in India.* (The Co-operators' Book Depot, Bombay, 1956.) Pp. 718. Rs. 27-8.

MISRA, B. R. *V for Vinoba. The Economics of the Bhoodan Movement.* (Orient Longmans, Bombay, 1956.) Pp. 67. Rs. 3.

PETERSEN, WILLIAM (ed.). *American Social Patterns.* (Doubleday, New York, 1956.) Pp. 263. 95 c.

RUSSIAN INSTITUTE, COLUMBIA UNIVERSITY. *The Anti-Stalin Campaign and International Communism. A Selection of Documents.* (Columbia University Press, New York; Oxford University Press, London, 1956.) Pp. 342. No price stated.

* Acknowledgment of publications does not guarantee review.

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SZCZEPANIK, EDWARD F. *The Cost of Living in Hong Kong.* (Hong Kong University Press, 1956.) Pp. 28. 7/6 stg.

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